

# AUTOMOTIVE INDUSTRIES

## AUTOMOBILE

Volume 69

Reg. U. S. Pat. Off.

No. 6

JULIAN CHASE, Directing Editor

DON BLANCHARD, Editor

P. M. HELDT, Engineering Editor JEROME H. FARRIS, Asst. Editor

JOSEPH GESCHELIN, Eng. Editor ATHEL F. DENHAM, Field Editor

GEOFFREY GRIER, Art Editor

## Contents

Automotive Industry Mobilizes to Put Through New Deal. By Don Blanchard	143
Just Among Ourselves	145
The Soundness and Necessity of Overhead Write-Downs: By Joseph Geschelin	146
Accurate Control of Conditions Provided in New Brake and Lining Testing Machine	150
Corrosion Theory of Cylinder Wear	153
Production Lines	155
Forum	156
Aging of Mild Steel Sheets (Continued)	158
Relative Fuel Consumption of Diesel and Gasoline Engines. By P. M. Heldt	159
The N.A.C.C. Code of Fair Competition	160
New Developments	162
News	164
Calendar of Coming Events	172
Advertisers' Index	40

Automotive Industries is published every Saturday by

CHILTON COMPANY

Chestnut and 56th Streets, Philadelphia, Pa.

C. A. MUSSELMAN, President and General Manager

J. S. HILDRETH, Vice-Pres. and Director of Sales

W. I. RALPH, Vice-Pres. G. C. BUZBY, Vice-Pres.

A. H. VAUX, Secretary and Treasurer

JOHN A. CLEMENTS, Asst. Treasurer

GEO. D. ROBERTS, Advertising Manager

Cable Address.....Auteland, Philadelphia

Telephone.....Sherwood 1424

### OFFICES

New York—U. P. C. Bldg., 339 W. 39th St., Phone Pennsylvania 6-0000

Chicago—367 West Adams St., Phone Randolph 9448

Detroit—110 Stephenson Bldg., Phone Madison 2090

Cleveland—1140 Guardian Bldg., Phone Main 6360

San Francisco—1045 Sansome St., Phone Douglas 4306

Los Angeles—Room 651, 1206 Maple St., Phone Westmore 6477

Portland, Oregon—72 Fifth St.

Controlled by United Publishers Corporation, 239 W. 39th St., New York. FRITZ

J. FRANK, President; C. A. MUSSELMAN, Vice-President; F. C. STEVENS,

Treasurer.

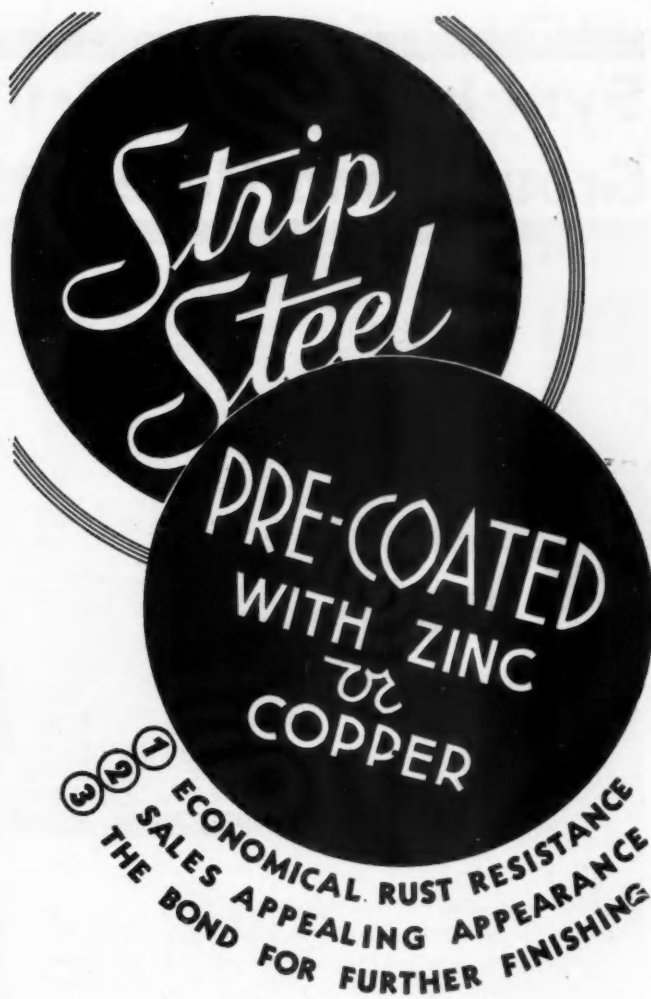
SUBSCRIPTION RATES: United States, United States Possessions, and all countries in the Postal Union, \$1.00 per year; Canada and Foreign, \$4.00 per year. Single Copies, 25c.

COPYRIGHT, 1933. CHILTON COMPANY

Member of the Audit Bureau of Circulations  
Member Associated Business Papers, Inc.

Automotive Industries—The Automobile is a consolidation of the Automobile (Monthly) and the Motor Review (weekly), May, 1903; Dealer and Repairman (monthly), October, 1903; the Automobile Magazine (monthly), July, 1907, and the Horseless Age (weekly), founded in 1895, May, 1918.

Automotive Industries



THOMAS Pre-Coatings as electrically applied by the Thomas Method are uniform, non-porous, crack and peel proof under deep stamping and forming operations—a safe specification always.

Zinc Coated Thomastrip provides either an appealing and durable rust-resistant finish, or a rust-resistant under coat for paint and lacquer finishes.

Copper Coated Thomastrip provides the base for further plating, or a rust-resistant finish for inside use.

Send for test samples—specify gauge, width, temper and coat desired. A Thomas Representative will gladly analyze your requirements without obligation.

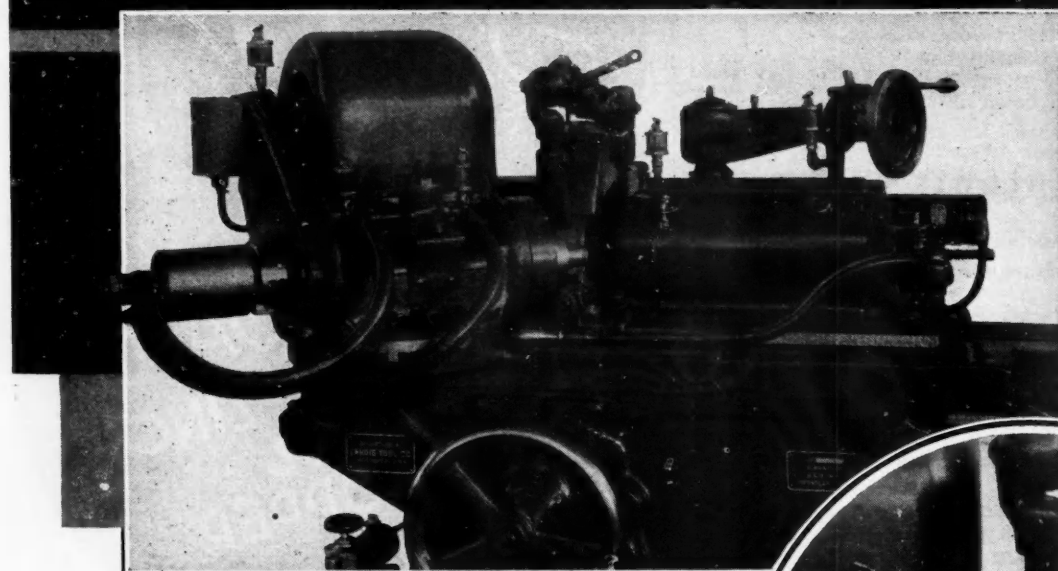


ELECTRO COATED  
**ThomaStrip**  
COLD ROLLED STRIP STEEL

SPECIALIZED  
PRODUCTION  
COLD ROLLED  
STRIP STEEL

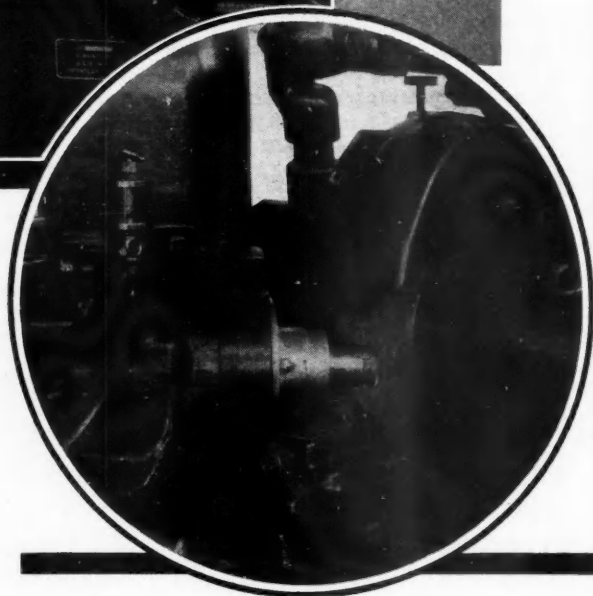
August 5, 1933

# Synchronizing Drum Springs Must Be Ground and Here's How LANDIS Does It



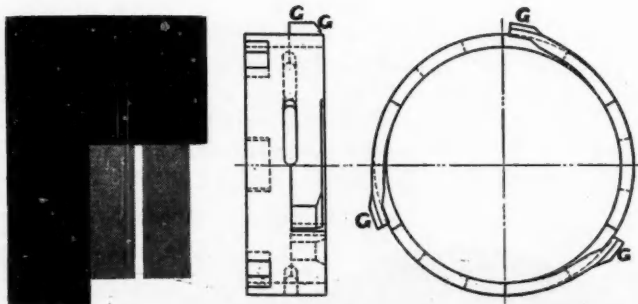
**T**HE grinding of synchronizing drum springs is a very interesting and, at the same time, a rather unusual operation. Landis 6" x 18" Plain Machines with certain special equipment are being used quite effectively by a large manufacturer both for grinding the 40° bevel or the O. D.

Operation is semi-automatic. A spring is placed on the arbor. The lever at the front of the work head is thrown thereby clamping the work. Then the longer lever, extending across the front of the machine, is pushed away from the operator. This first starts work rotation and immediately following traverses the wheel across the spring. Spring tension pulls the wheel back to its original position. Ordinarily 4 or 5 of these short reciprocations are employed to bring the bevel down to the proper dimension. Although the illustrations show the machine set up for grinding the 40° bevel, the O. D. may be also ground with the same equipment merely by setting the work head around to its normal position instead of at an angle.



**P**RODUCTION at the rate of 5 springs per minute, gauging every 4th piece is being secured. For short periods of time, as many as 6 or 7 pieces per minute have been ground, gauging approximately every 15th piece. Stock removal when grinding the bevel varies but when grinding the O. D. is from .015" to .020".

Few manufacturers will ever number among their problems the grinding of such a part. Many other parts with characteristics just as peculiar do have to be ground in many plants. The thought we wish to leave with you is this. Landis, because of over 40 years experience in the design and manufacture of precision grinding machines, is pre-eminently fitted to help solve your grinding problems regardless of their nature.



## LANDIS TOOL COMPANY

WAYNESBORO PENNSYLVANIA

DETROIT

CHICAGO



NEWARK

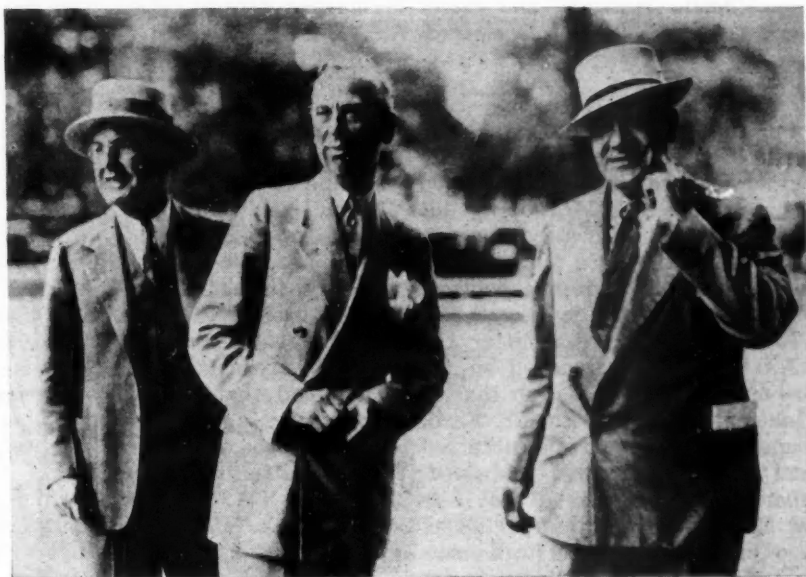
PHILADELPHIA

## Automotive Industry Mobilizes To Put Through the New Deal

by Don Blanchard

Editor, Automotive Industries

Manufacturers of complete vehicles, parts and accessories, wholesalers and dealers get down to brass tacks and make last week the most dramatic in history of Industry. Codes become realities



N.A.C.C. and Packard president Macauley, G. M. president Sloan and Gen. Johnson, N.I.R.A. administrator, at Detroit following the N.A.C.C. code meeting

UNQUESTIONABLY the last week of July, 1933, will go down in automotive records as one of the most dramatic and significant periods in the industry's history.

In one crowded week, a super-organization of parts and equipment manufacturers was formed, steps were taken to set up an equally representative organization of automotive wholesalers, the National Automobile Dealers Association with the cooperation of the International Association of Automobile Show and Association Managers made substantial progress in the development of a suitable set-

up, and as a climax to the unprecedented activities of the week, the N.A.C.C. filed a code of fair competition with N.R.A.

How soon hearings will be held on the N.A.C.C. code apparently depends to a considerable extent on the promptness with which codes now being formulated by other elements in the industry are filed. The administration is reported to believe that the whole matter will be expedited if hearings on the different automotive codes are handled consecutively.

The hearings will be held by Robert Lea, deputy administrator. Mr. Lea was president of the Mo-

line Plow Co. at the time Gen. Johnson was associated with that company. At the time of his appointment as deputy administrator, he was president of the Illinois Bank & Trust Co. of Moline. Malcolm Muir who, it was reported earlier in the week, would hold automotive hearings, will have under his jurisdiction only bus and truck transportation codes as well as other non-automotive lines.

The only official explanation of Gen. Johnson's hurried flight to Detroit is contained in a statement in which he said, "I heard they were stuck out there and I knew it was because they did not under-





Leaders in the formation of the A.P. & E.M. from left to right—A. C. McCord, McCord Radiator & Mfg. Co.; C. O. Miniger, Electric Auto-Lite; C. S. Davis, Borg-Warner; Vincent Bendix, Bendix Aviation, and Harry F. Harper, Motor Wheel. Mr. Davis was elected A.P. & E.M. president

stand the provisions of the law." It has been freely conjectured that fear of jeopardizing the open shop was delaying N.A.C.C. action, but reports that the difficulty was due to failure of the Ford Motor Co. to subscribe to the code are believed to be nearer to the truth.

It is understood that after the N.A.C.C. members reached an accord on the code, it was felt that as a matter of courtesy to Mr. Ford, formal filing should be deferred until his assent was obtained. Otherwise it was feared that formal filing might be interpreted as an effort to coerce the Ford company. When General Johnson arrived in Detroit, it is reported he urged immediate filing and his advice was accepted.

What Mr. Ford proposes to do, can only be conjectured. It is understood that General Johnson discussed the matter with Mr. Edsel Ford while in Detroit. On his return to Washington, the General was asked if the Ford Motor Co. would file a code and he replied that he did not know. He pointed out, however, that in his recent radio talk he said that Mr. Ford had told N.R.A. that he supported its program.

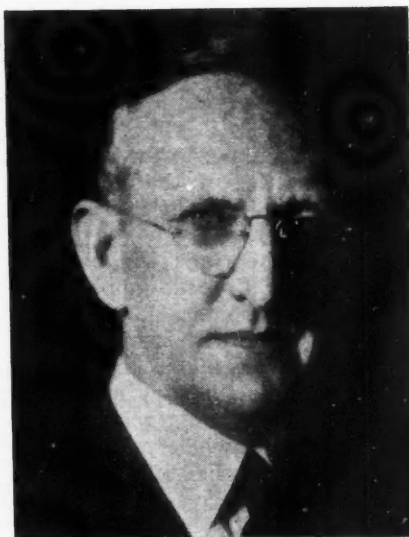
"Ford might file a separate code?" the General was asked. "Yes, you are right in that," he replied. "He is not under the group and he has a perfect right to do what he did."

In subsequent questioning, however, the General admitted that the law did not provide for division of

an industry and that eventually all units in the automobile industry would be required to accede to the same conditions.

Meanwhile codes are being whipped into shape rapidly by the newly formed A.P.&E.M. and by the automotive wholesalers group, although as we go to press, final drafts are not available. It is understood that they are practically complete, and *Automotive Industries* hopes to be able to present them in full next week.

The N.A.C.C. code, which is printed in full on page 160 of this issue, was signed by members representing more than 98 per cent of



C. C. Carlton, Motor Wheel, elected executive vice-president of A.P. & E.M.

the Chamber membership. The signers to date include Auburn, Autocar, Brockway, Continental, Corbitt, Douglas, Duesenberg, Federal, General Motors and General Motors Truck, Graham - Paige, Franklin, Hudson, Hupmobile, Le-Blond-Schacht, Mack, Moreland, Nash, Packard, Pierce-Arrow, Reo, Sterling, Stewart, Studebaker, Stutz, Twin-Coach, Ward, White, Willys-Overland and International Harvester. General Motors signed for all of its passenger car divisions and the same is true of Chrysler.

The N.A.C.C. code is one of the simplest that has been filed with N.R.A. as it deals only with wages, hours, etc., and the necessary administrative set-up. It is one of the very few codes of the hundreds that have been filed which asks for no exemptions from the anti-trust laws. It is effective only until the end of this year.

Maximum hours are set at 35 hrs. per week average for the life of the code with provisions for operating 48 hrs. when conditions demand it. Presumably, where advantage is taken of this longer week, other weeks of less than 35 hrs. will have to be worked to bring the average down to the standard. Comparing this standard with the A.P.&E.M. code, it provides for a 40 hr. average during the year with 48 hours in emergencies.

The minimum wages set for office employees are in accord with the President's blanket code, but for factory workers a range of 40 to 43 cents is established as compared with a 40-cent base in the blanket agreement. The parts code follows the blanket code so far as minimum wages are concerned.

The N.A.C.C. code goes on record strongly for the open shop. Yet in two carefully phrased paragraphs on this important point there apparently is no conflict with the labor provisions of the law. This viewpoint is supported by General Johnson's definition that "An open shop is a place where any man who is competent will be employed regardless of whether or not he belongs to the union. That is exactly what the law says."

Turning now to codes being developed by the parts makers, automotive wholesalers and automobile dealers, the code of the first of these groups was outlined in considerable detail in *Automotive Industries* of July 29. The wholesalers' code provides for a maximum work week of 40 hours average. (Turn to page 160, please)



# JUST AMONG OURSELVES

## What a Million Buyers Want

JUST about the time we were writing the item which appeared on this page recently urging the benefits of intelligent consumer research, this very topic apparently was getting renewed attention at passenger car factories. General Motors, which has long been active in searching out market facts in one way or another, is sending out something like 1,000,000 consumer research questionnaires — at least, that's the information which reaches us through our unofficial ear-to-the-ground department.

The big corporation has been working along these lines for some time and the present widespread investigations, as we see it, will constitute important quantitative additions to the work. Other company executives are thinking along similar lines and evidence is increasing of a growing tendency to analyze public desires.

\* \* \*

## That One-Cylinder Cadillac

OF particular interest to Fred J. Fisher must be the old chain-driven Cadillac one-cylinder coupe which is among the G. M. C. exhibits at the Century of Progress. The body of this car was built under Mr. Fisher's supervision in the Wilson Body Company plant in Detroit previous to the organization of the Fisher Body Corporation.

Incidentally the principle of ventilation of the rear windows on this car is similar in a rough way to the Fisher Body No-Draft Ventilation introduced on all General Motor's cars last January.

\* \* \*

## Polite Police

POLICE in St. John, N. B., seem to have evolved an excellent plan of separating the sheep from the goats among violators of traffic laws.

For strangers and others who violate minor traffic laws the first time, a courtesy windshield sticker has been issued by the Chief of Police. This procedure has won much respect and commendation, especially from tourists.

The sticker, signed by the police constable, is a printed slip reading something like this: "You have unintentionally violated the traffic laws of this city by parking longer than allowed by law. We know this will not occur again. Thank you."

\* \* \*

## Right on One Count

BACK in 1931 we went down to Washington with some other business paper editors and participated in a broadcast about the business outlook. To say that the mildly optimistic hopes which we voiced at that time turned out to be inaccurate estimates of what actually occurred would be to give ourselves all the best of it.

Hard as we may try to forget some of those prophecies, we have one particular friend and severest critic who will never permit that particular bygone to be a bygone. He sacrificed a whole evening at the movies to stay home and listen to the talk and his greeting each time we have met since has been: "Well, how are you—and have you been giving any radio talks recently?"

We saw him again the other day and finally extracted this one bit of balm. "You did say one thing in that talk which I remember," he laughed. "You said that the automobile business didn't have to build 4,000,000 cars in order to make good profits. At least that probably is true!"

And it is true with a vengeance.

\* \* \*

## G. M.'s 6 Month Record

THE General Motors statement showing \$41,198,169 profit with sales to dealers, including Canadian and overseas shipments, of 298,873 vehicles for the second quarter of 1933 illustrates this point when compared with a profit of only \$5,326,377 on 197,659 vehicles in the same quarter a year ago.

The net profit increased more than 673 per cent, in other words, while the sales volume was going up only 51 per cent.

Equally striking is the fact that these second quarter profits this year work out to about \$138 per vehicle as against only \$27 per vehicle in the second quarter of 1933.

Many items besides actual car sales advance or retard total earnings in so complex a picture as that of General Motors, of course, but the figures do show clearly how rapidly the earnings of an automotive organization can be advanced as the chance comes to spread overhead out over anything above minimum volume totals.—N. G. S.

# The Soundness and Necessity of

by Joseph Geschelin

Engineering Editor, Automotive Industries

**D**ECREASED productivity, shifting values of plant and equipment, as well as an urgent need of reducing overhead expense, have played their part in drastic write-downs in capital asset valuations.

Whether or not this action has met with acclaim on the part of orthodox accountants, the fact remains that leading production men are thoroughly sold on both the soundness and the necessity of the move under existing conditions. Certainly there is nothing in the situation that would prevent revalu-

ation up or down, depending upon the outcome of current economic activity.

About 25 executives with whom we have conferred recently, believe that the write-down is a downright boon to the production department. By reducing overhead it will bring production costs more in line with present conditions; it will alleviate some of the pain due to the operation of expensive machinery and tools under conditions for which they were not designed; it will give the equipment policy a new bill of health.

What can and should happen to the equipment policy of the organization under the "new deal" is something that concerns everybody. Why? Because the profit ability and indeed the very existence of

any manufacturer depends upon the modernity and physical condition of his production facilities. It's fatal in this day and age to lag behind aggressive, progressive competitors.

Another factor which has assumed real proportions is the effect on costs of the minimum wage and limited working hour provisions of the National Industrial Recovery Act. About the only way that costs may be held down to a reasonable level is to effect the most efficient utilization of direct labor, production equipment, materials handling and other related processes. Modern equipment of the very latest type is needed if costs under the "new deal" are to be held anywhere near what they are now.

In an excellent article by George A. MacFarland, associate professor in the Wharton School, University of Pennsylvania, we find a survey of the general trend to capital asset revaluation. In brief, he says:

**Table I Analysis of Write-Down by Automobile Manufacturers\***

\* Abstracted from financial statements analysis Automotive Industries, May 6, 1933.

	Plant and Property—Depreciated				Depreciation			
	1929	1930	1931	1932	1929	1930	1931	1932
Auburn .....	\$7,075	\$7,810	\$7,834	\$7,343	\$426	\$529	\$567	\$625
Chrysler .....	83,624	74,173	65,513	61,697	15,293	15,293	14,297	13,239
Graham .....	13,987	12,907	11,843	6,640	932	762	763	726
Hudson .....	33,276	30,173	29,338	25,614	3,882	3,975	3,444	3,037
Hupp .....	16,407	13,828	11,315	7,167	1,026	1,159	1,325	802
Mack .....	20,506	19,366	17,184	16,643	2,030	1,827	3,548	617
Nash .....	9,161	8,343	6,819	6,029	.....	.....	1,225	959
Packard .....	37,870	35,911	33,442	31,319	3,123	3,003	2,454	2,077
Reo .....	10,689	10,335	9,663	4,646	1,642	2,225	1,299	1,119
Studebaker .....	59,077	57,726	55,668	58,513	1,993	2,329	2,252	1,723
White .....	9,634	9,187	8,545	*	.....	.....	.....	807
Total .....	\$301,306	\$279,759	\$257,164	\$225,611	\$30,347	\$31,102	\$29,949	\$23,965

\* Consolidated with Studebaker. 000 omitted

# typ of Overhead Write-downs

Their relation to equipment policies and modernized machinery which, under the "New Deal," are important to all departments

"The National Association of Cost Accountants Bulletin of Feb. 15, 1933, contained a questionnaire on this subject. By the time the March 15 bulletin went to press 117 replies had been received from representatives of commercial and industrial organizations which had investments in plant and equipment. These 117 replies indicated that 46 companies, or about 40 per cent of those represented by the replies, have written-down assets. J. M. B. Hoxsey, executive assistant, Committee on Stock List, New York Stock Exchange, in an address a month ago stated that the movement has almost approached the proportions of a mass movement. W. A. Paton, professor of accounting at the University of Michigan and well-known writer in the field of accounting, states that 'the wholesale amortization of plant values is the major phenomenon of the depression from an accounting standpoint.'

"Reports of substantial write-downs by particular companies are observed regularly in current financial news. It should be noted, however, that many companies, including some of the largest, have not succumbed to the movement, but their resistance to it may be broken by a continuance of the depression and the accumulating effect and results of the movement itself."

More recently, Don Blanchard, editor of *Automotive Industries*, analyzed the financial statements of 11 automobile manufacturers<sup>2</sup> and 33 parts makers<sup>3</sup>. Tables 1 and 2, taken from the mass of evidence presented in these articles, show precisely what has happened to assets and intangibles. In the passenger car group, capital assets after depreciation have been written down about 25 per cent from 1929 levels; parts makers show about the same record.

No doubt whatever exists that write-downs have taken hold in the automotive industry.

It is well to note that the data in both Tables 1 and 2 show fixed assets plus additions less depreciation and that the write-down represents a comparison of the figures for 1929 and 1932. Consequently, the ratios quoted above are only relatively true since we may not be comparing exactly the same assets. On the whole, however, the figures do represent a fair estimate of the situation.

Talk to any production man and you will find him up in the air because of the restrictions imposed by conventional accounting practice upon his actual needs as expressed by cost accounting analysis. Traditionally, the situation has made it difficult and at times impossible to get appropriations for new machin-

ery because the accounting department does not recognize the need for variable depreciation rates, as well as high rates on certain types of equipment, and the necessity for reasonable book values more in line with reproduction costs and the level of prices in the second-hand market.

MacFarland brings this out in his paper in noting that conventional accounting practice values fixed assets at cost less accrued depreciation. This basis, known as the historical cost plan, is advocated by the Bureau of Internal Revenue, but is considered too conservative by many production men and appraisers. The latter advocate valuations on a reproduction cost basis, meaning thereby, cost to reproduce the assets new, less depreciation for their age.

According to MacFarland a new school of thought which favors a plan of stabilized depreciation originated in Germany largely as a result of European experience with inflation. Advocates of stabilized depreciation consider the reproduction cost method better than the historical cost plan, but feel that it goes only part way. Stabilized depreciation is concerned with the maintenance of the general equivalent of the purchasing power invested in the asset.

Several authorities in this coun-



Table 2 Analysis of Write-Downs by 33 Parts Makers\*

\* Abstracted from financial statement analysis in Automotive Industries, June 3, 1933.

	Plant and Property after Depreciation				Good-Will, Patents, etc.			
	1929	1930	1931	1932	1929	1930	1931	1932
American Chain	\$13,136	\$13,453	\$12,614	\$11,758	\$2,649	\$2,429	\$1,899	\$832
Bendix Aviation	7,985	11,945	11,486	10,196	33,281	36,672	36,801	.....
Bohn Aluminum	5,115	5,162	5,029	2,693	181	150	134	124
Borg-Warner	17,545	18,394	17,665	15,750	679	546	465	421
Briggs Manufacturing	20,446	21,417	19,901	11,039	.....	.....	.....	.....
Budd Manufacturing Co., E. G.	14,142	13,578	15,055	12,455	295	197	219	.....
Budd Wheel	2,643	2,839	2,888	2,466	1,284	1,284	1,334	1,334
Continental Motors	16,004	12,587	11,840	11,099	5,908	5,908	5,908	5,908
Campbell, Wyant & Cannon	3,875	3,875	3,573	3,363	.....	.....	.....	.....
Eaton Mfg. Co.	7,943	10,908	7,720	7,476	337	298	282	271
Electric Autolite	11,280	12,555	11,304	8,238	.....	.....	.....	.....
Electric Storage Battery	13,018	12,455	11,497	10,715	.....	.....	.....	.....
Hayes Body	3,661	3,361	3,137	2,263	.....	.....	.....	.....
Houdaille Hershey	4,635	4,846	7,344	7,104	.....	.....	.....	.....
Kelsey-Hayes	13,095	16,488	15,790	8,495	9,543	9,543	9,543	.....
Lycoming	2,865	3,289	3,488	3,335	.....	.....	.....	.....
Marlin-Rockwell	2,599	2,463	2,099	1,856	.....	.....	.....	.....
Midland Steel Products	6,014	5,734	5,377	4,933	1,675	1,675	1,675	1,916
Motor Products	4,364	4,153	3,918	3,647	.....	.....	.....	.....
Motor Wheel	7,230	7,052	6,693	6,273	.....	.....	.....	.....
McCord Radiator	4,140	3,526	3,175	2,732	.....	.....	.....	.....
Mullins Manufacturing	4,434	4,578	4,980	3,235	86	89	94	14
Murray Corporation	20,790	20,123	19,869	10,099	301	301	296	.....
Raybestos-Manhattan	7,543	7,401	7,014	6,769	595	595	595	595
Reynolds Spring	3,880	1,806	1,760	1,721	734	.....	.....	.....
Ross Gear & Tool	1,599	1,521	1,402	1,310	.....	.....	.....	.....
Spicer Manufacturing Co.	8,807	7,885	6,785	4,652	209	188	174	.....
Stewart-Warner	17,211	16,759	12,411	11,794	.....	.....	.....	.....
Thompson Products	3,298	3,445	3,498	3,459	834	833	830	827
Timken-Detroit Axle	7,730	7,761	7,491	6,819	.....	.....	1,684	1,684
Timken Roller Bearing	23,207	22,647	20,715	18,769	.....	.....	.....	.....
Trico Products	1,601	1,586	1,655	1,606	351	350	337	336
L. A. Young	4,028	3,909	3,715	3,355	479	275	275	275
Total	\$285,863	\$289,501	\$272,888	\$221,474	\$59,421	\$61,333	\$62,545	\$14,537

000 omitted

try during the last several years have advocated this procedure, recommending the use of a high rate of depreciation in periods of high productivity when the assets are worked more intensively, and a low rate during times of depression and even during seasonal recessions.

Mr. Hoxey of the New York Stock Exchange suggests as a possible alternative to charging the full depreciation against operations, that a portion of the charge which represents the depreciation on the unused plant capacity be made to a Deferred Depreciation Expense Account. Several of the production executives mentioned earlier recommend the same thing, calling it a "cost-of-idleness" account. This deferred account would be absorbed in times of prosperity as an item

shown plainly in the income statement.

With the general write-down of assets, it is likely that the book value of much old and inefficient equipment may come down to a point where the factory can justify much-needed replacements, and can prove the point in the language that the fiscal officers can understand, since the profit possibilities of the new machine need not be artificially burdened by the fictitiously high salvage values at which the old equipment has been carried on the books.

If through an inflationary wave or a change in value of the dollar or the effect of the National Industrial Recovery Bill costs and prices start on an upward swing, and if this raises the current level of machine tool prices, there is nothing to prevent revaluation upward. In fact, the mechanism of regular revision is the essence of stabilized depreciation so sorely needed by the factory organization.

Now it is a significant fact established by the data in Table 1 that the depreciation charge has been reduced in proportion to the write-down of assets. This relieves the cost burden and makes possible a more profitable operation at the present rate of productivity by shifting the "break-even" point to a lower level.

Moreover, except where assets have been scrapped the income tax deduction remains on the original historical cost basis. This works in two directions to improve the surplus account—in the case of write-down it yields a profit to surplus; in the case where assets have been scrapped the surplus is augmented by reduced local taxation.

The foregoing raises an interesting question concerning the attitude of the Bureau of Internal Revenue as to the basis for evaluating capital assets. For example, the Recovery Bill proposes a tax on net worth on the one hand and then a surtax on profits in excess of a given

percentage referred to net worth. Will the Revenue Department recognize a write-down as a permissible change in asset valuation? If it does, what will happen to the tax on excess profits? Obviously, if net worth is decreased due to a change in capital and surplus, the ratio of profits to net worth will be so much higher.

Of course one way of looking at it is that for some short time to come the savings on net worth may be real while the penalty on excess profits may not be so real. And by the time profits assume alarmingly high proportions, the Recovery Bill may have been recalled by the President.

But there is an element of hazard in the situation which must be recognized and met with heroic treatment. As depreciation charges drop with write-down, the depreciation reserve will shrink correspondingly.

This places a new emphasis upon the need for a change in our thinking about depreciation accounting and the effects of the company's equipment policy on its future welfare. Unless both depreciation and obsolescence are taken into account and adequately amortized, there is grave danger that the profit possibilities of the company will be seriously impaired through inability to modernize its production facilities as needed.

This makes it advisable to consider the suggestion made by many executives of setting up an actual Cash Reserve for Machinery Replacement, earmarked for this purpose only. Then even if the fund were relatively small urgent replacements still could be made as needed.

Not only would this protect the rights of security holders upon whom the company depends for new funds, but it would preserve the standing of the company and enable it to maintain its position in a highly competitive market. Unless the Cash Reserve for Machinery Replacement is established, the earnings of the equipment may be dissipated through diversion to surplus and thence to dividends, with a consequent jeopardy to profit possibilities.

Needless to say, the whole matter hinges upon revaluation consistent with a sound appraisal of the indi-

vidual company's problem and a sound appraisal of the real current value of its assets. That this has been considered is evident from reports we have received indicating that the net worth of the assets has been closely scrutinized. In actual detail, some equipment has been scrapped, some has been written down 50 per cent, some 25 per cent, and some newer machinery retained at its original cost less accrued depreciation. The average result has been a net write-down around 25 per cent.

As Professor MacFarland puts it, "The evidence of accountancy opin-

ion heretofore given implies no serious objection; in fact it indicates agreement with write-down prompted by write-ups of the past, neglected obsolescence charges of the prosperity period and over-capacity which may not reasonably be expected to be utilized in the near future. Or which is likely to be obsolete before it is needed."

The "new deal" will be a boon to the factory organization and will provide a new impetus to profitable operation if properly administered.

1. "Capital Asset Revaluation" by George A. MacFarland, paper read at the 1933 Wharton Alumni Institute.

2. "1932 Statements Show Need for Moderate Car Price Increase" by Don Blanchard, Part 1, Automotive Industries, April 29, 1933; Part 2, Automotive Industries, May 6, 1933.

3. "Parts Makers Maintain Strong Current Position Despite 1932's Heavy Losses" by Don Blanchard, Automotive Industries, June 6, 1933.

## American Standards Association Assumes Former U. S. Functions

AS part of the Government economy program the Bureau of Standards is discontinuing most of the work which it has been carrying on in the field of simplification, commercial standards, safety codes, and building codes. The following activities of the Bureau are to be transferred to the American Standards Association, a federation of 37 national technical societies, trade associations, and governmental bodies, with headquarters in the Engineering Societies Building, 29 West 39 Street, New York, as the result of an arrangement worked out between Secretary of Commerce Daniel C. Roper and President Howard Coonley of the American Standards Association:

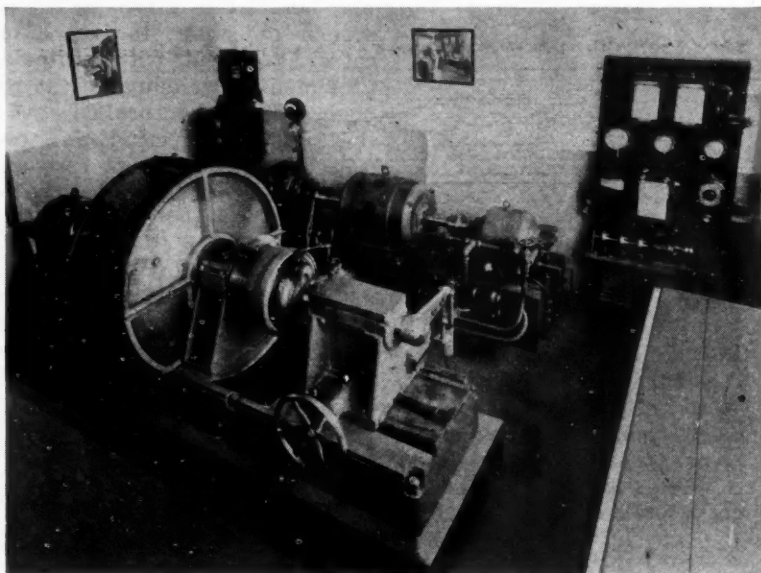
Division of Trade Standards  
Division of Specifications  
Division of Simplified Practice  
Building Code and Plumbing Code Sections of the Building and Housing Division  
Safety Code Section

In a letter to the Secretary of Commerce, President Coonley thanked him for the confidence shown in the ability of the A.S.A. to carry on this important work on behalf of the industry and consumer groups. He assured the Secretary that preparations for the taking over of the work would be begun without delay. Mr. Coonley pointed out that the most pressing immediate task, if they were to continue the new work effectively,

would be to obtain substantially increased financial support, and that every effort would be made to accomplish this end, and that, since the Department's action was largely in recognition of the desire of industry to carry on standardization through its own cooperative organization, he had no doubts concerning the ultimate success of their efforts.

### Smallest Magnetic Clutch

WHAT is believed to be the smallest magnetic clutch ever built was completed recently by the Magnetic Manufacturing Company of Milwaukee, manufacturers of the Stearns line of magnetic clutches. It is only 3 in. in diameter and weighs 3½ lb. The collector rings are mounted on the outside diameter of the clutch to save space on the shaft, but if preferred they can also be placed on a hub extension of the field member. The clutch is said to be simple in design and adapted for use in drives requiring either automatic or manual clutching. It will transmit a torque of 40 lb.-in. in continuous operation with a consumption of 15 watts. Direct current is required, but where only alternating current is available a small 110-volt rectifier can be supplied to furnish the direct current. For intermittent service, the capacity of the clutch is higher than 40 lb.-in., depending upon the proportion of time power is being transmitted.



View showing new brake testing equipment

**T**HERE are certain difficulties connected with road-tests of vehicle brakes, especially with tests designed to yield the sort of information manufacturers of brakes and brake linings require, and this has led to the development of a number of brake-testing machines. A machine of this kind has been developed for the American Brake Materials Corporation by the Oilgear Company of Milwaukee, and an illustration of the machine is reproduced herewith.

To permit infinite variation of speed and accurate speed control, so that the rubbing speed of the lining on the drum may be made to correspond to the rubbing speeds on the car with different sizes of tires, a special drive is used consisting of a combination of an Oilgear variable delivery pump and an Oilgear constant-delivery pump discharging into an Oilgear constant-displacement motor. The pumps are direct-connected to a 50 hp. electric motor running at 870 r.p.m.

Using lubricating oil as the power fluid, these pumps transform the constant rotary speed of the electric motor into controlled, infinitely variable speed of the inertia masses of the dynamometer. Up to 350 r.p.m. the constant-delivery pump is out of the pressure circuit and discharges into the reservoir in the base of the pump unit; up to this speed the variable-delivery pump handles the load, and by varying the stroke of this pump the speed of the dynamometer can be varied as required. From 350 to 1000 r.p.m. both

pumps are in the pressure circuit, discharging into the constant-displacement motor driving the dynamometer. There is a relief valve in the pipe line which is set to open at 2600 lb. per sq. in., at which pressure the torque of the driving motor is approximately 4600 lb.-in. The torque efficiency of the motor is better than 96 per cent and maximum torque is available at all speeds. The over-all efficiency of the hydraulic unit is said to vary between 88 and 92 per cent.

Speed control of the driving motor and dynamometer is effected by changing the stroke of the variable delivery pump. An Esterline Angus tachometer generator with external gear drive is fitted to the dynamometer mainshaft; connected to this generator in parallel are an Esterline Angus A W speed recorder with a scale of 0-1000 r.p.m., in divisions of 20 r.p.m., and a speed indicator graduated in the same manner, mounted over the variable-stroke pump. It is possible to adjust the speed of the dynamometer within the limits of accuracy of plus or minus 5 r.p.m.

Generally speaking, two types of tests are run on the dynamometer. One is a "start and stop"

test, consisting of a rapid acceleration of the flywheel to a predetermined speed (by the electric motor through the Oilgear transmission), cutting out of the power, and an immediate deceleration by application of the brake.

In the other, the "drag test," the flywheel is accelerated to a predetermined speed, and a constant load is then thrown on the transmission and motor by means of the brake, which the motor continues to pull. Any variation in the brake is immediately observable on the pressure gage in the main line of the hydraulic transmission.

If, for example, the gage reads 1500 lb. per sq. in. while the unit is pulling the brake load, any variation in conditions at the brake (due to heat expansion, for instance) tending to increase or decrease the load would cause the pressure to increase or decrease. In this test, the speed should remain constant as long as the brake load does not exceed the capacity of the transmission. When the capacity of the machine is reached, the relief valve opens, thus preventing overload.

It is worthy of note that no great overload can be thrown on

## Accurate Control of in New Brake and Lin



the line and that as far as the electric circuit is concerned, the overload will be minimized by the fact that the electric driving motor is always running at a constant speed. This holds true in both tests. Assuming the full weight of the flywheel in operation, and a relief valve setting of 2600 lb. per sq. in., approximately 48.3 hp. is thrown on the line. Acceleration of the flywheel with all weights applied from 0 to 920 r.p.m. takes place in about 35 seconds.

The inertia masses of the dynamometer are designed to store 766,465 ft.-lb. of kinetic energy at 1000 r.p.m. There is one disc  $1\frac{1}{2}$  in. thick, fixed to the main shaft of the dynamometer, and there are eleven discs  $\frac{1}{2}$  in. thick and movable from a stationary hub sur-

rounded the shaft to the hub surrounding the mainshaft and moving with it. All of these discs are 43 in. in diameter. The kinetic energy at 1000 r.p.m. stored in the motor and dynamometer, including the stationary disc, is 167,818 ft.-lb. The kinetic energy stored in each movable disc is 54,422 ft.-lb. So we have a range of available kinetic energy at 1000 r.p.m. of from 167,818 to 766,465 ft.-lb., increasing by steps of 54,422 ft.-lb. By varying the speed from 0 to 1000 r.p.m. the range of kinetic energy available lies between two energy curves 0 to 167,818 and 0 to 766,465 ft.-lb. In terms of automotive vehicles this covers the range of vehicles weighing 2600 to 20,000 lb. (roughly). The mainshaft with its inertia weight is

carried in roller bearings which operate in a bath of oil. An interesting point about the lubrication of these bearings is that as the machine accelerates they pick up oil, keeping the rolls and races lubricated, and when it decelerates and stops, the oil they have picked up drains to the bottom of the bearing again. Mounted on the end of the dynamometer mainshaft is the drum mounting hub. Attached to this hub is a series of six collector rings, insulated from the hub and from each other. The hub carries six terminals connected to these collector rings, and there are six brushes contacting these collector rings. The brushes are connected to thermocouple leads which run to a six-point switch on the instru-

ment panel. Three thermocouples may be buried in the drum and connected to the hub terminals of the collector rings for temperature measurement. By the use of adapters, any size and type of drum now in use may be attached to the drum-mounting hub. A well in the base of the machine permits of mounting a wheel-and-tire assembly, as well as the drum, up to an outside diameter of 44 in., leaving 1 in. clearance between tire and the dynamometer base. By the use of adapters, any size of brake now in commercial use may be attached to a brake mounting flange on the end of a shaft which is carried in bearings in a movable pedestal. This permits the brake assembly to be readily moved into position in the

drum and the pedestal to be locked in place. The other end of the flanged brake mounting shaft carries an arm which is connected to a hydraulic cylinder of 1 sq. in. piston area. This cylinder in turn is connected by a hydraulic line to an Esterline Angus Model AW pressure recorder which draws the curve of the torque output of the brake assembly under test. To make the complete dynamometer function as intended, it was necessary to develop a control mechanism. A synchronous motor running at 1800 r.p.m. drives a heliocentric reduction gear with 3600 to 1 reduction, which in turn drives a camshaft which makes one revolution in 2 minutes. Mounted on this camshaft are three series of cams. The group to the left is used to control the Oilgear drive; the group in the center, to control the pressure and speed-recording instruments, and the group to the right, to control the application of the brake. The group to the left is a series of six cams divided into two second intervals and each of these cams has a contact arc of 10 seconds. Each of these cams is movable about the shaft, permitting the series to be rotated into any desired position to get the required number of applications per revolution, namely one in two minutes, one per minute, or two per minute.

These series of cams operates an oil switch in an electrical circuit having an off-on switch and a solenoid with  $7\frac{1}{2}$  lb. pull in the same circuit. The solenoid is connected to a pilot valve in a line from a small pump built in the variable displacement Oilgear pump, to the control valve which regulates the discharge from the two Oilgear pumps, pumping the fluid back into the base when the control valve is closed and into the line to the Oilgear motor when the control valve is open. The only requirement is that if the desired speed of the dynamometer is to be obtained, the discharge of the variable delivery pump should be regulated to the required amount by setting to the proper stroke, and the cams should be spread out to give a sufficient time interval in which the electrical circuit is closed and the solenoid holds open the pilot valve which in turn keeps the control valve open, permitting the dynamometer to reach the required speed. If the time interval is too long, the dynamometer will balance at speed regulated by the stroke setting of variable delivery pump.

# Conditions Provided ing Testing Machine

Equipment developed for American Brake Materials Corp. by Oilgear Co. is designed for "Start and Stop" and "Drag" tests

rounding the shaft to the hub surrounding the mainshaft and moving with it. All of these discs are 43 in. in diameter. The kinetic energy at 1000 r.p.m. stored in the motor and dynamometer, including the stationary disc, is 167,818 ft.-lb. The kinetic energy stored in each movable disc is 54,422 ft.-lb. So we have a range of available kinetic energy at 1000 r.p.m. of from 167,818 to 766,465 ft.-lb., increasing by steps of 54,422 ft.-lb. By varying the speed from 0 to 1000 r.p.m. the range of kinetic energy available lies between two energy curves 0 to 167,818 and 0 to 766,465 ft.-lb. In terms of automotive vehicles this covers the range of vehicles weighing 2600 to 20,000 lb. (roughly). The mainshaft with its inertia weight is

ment panel. Three thermocouples may be buried in the drum and connected to the hub terminals of the collector rings for temperature measurement.

By the use of adapters, any size and type of drum now in use may be attached to the drum-mounting hub. A well in the base of the machine permits of mounting a wheel-and-tire assembly, as well as the drum, up to an outside diameter of 44 in., leaving 1 in. clearance between tire and the dynamometer base. By the use of adapters, any size of brake now in commercial use may be attached to a brake mounting flange on the end of a shaft which is carried in bearings in a movable pedestal. This permits the brake assembly to be readily moved into position in the

The group of cams in the center is used to control the chart speed of the Esterline Angus A W pressure and speed recorder. This group is a series of six cams divided into two seconds intervals, and each of these cams has a contact of 6 seconds. Each of the cams is movable about the shaft, permitting the series to be rotated into any desired position to get the required number of applications per revolution, namely one in two minutes, one per minute, or two per minute. This series of cams operates an oil switch in an electrical circuit having an off-on switch and a solenoid controlling a clutch between a synchronous motor running at 1800 r.p.m. and driving through a 3600 to 1 reduction gear, and the driving shafts of the speed and pressure recording charts which are connected together. This makes it possible to run the charts between applications at a speed of  $\frac{3}{4}$  in. per hour running on their own individual synchronous motors, and at  $\frac{3}{4}$  in. per second running on the extraneous synchronous motor.

### Brake Application Control

The group of cams at the right is used to control the force of brake application. Air at a pressure of 130 lb. per sq. in. is available in the plant. By means of a regulating reducing valve, any desired air pressure may be obtained. For brakes which are air-operated, air at this reduced pressure is admitted directly to the diaphragm chamber, by means of a solenoid-operated valve. For brakes which are hydraulically and mechanically controlled, the air is admitted to a large cylinder which has a piston connected to one end of a beam, on the other end of which is connected a piston operating in a hydraulic cylinder which is connected by a hydraulic line to the hydraulic brake direct, or to a special operating cylinder which controls the lever or cable operating the mechanical brake. The group of cams at the right is a series of 6 cams divided into two second intervals, and each of these cams has a contact arc of 5 seconds. This permits the charts to be running at the fast speed when the application is made and cut-off. Each of these cams is movable about the shaft permitting the series to be rotated into any desired position to get the required number of applications per revolution, namely, one in two minutes, one per minute, or two

per minute. This series of cams operates an oil switch in an electric circuit having an off-on switch and a solenoid having a 4-lb. pull. This solenoid is connected to the lever of the air-operating valve which admits the air to the diaphragm chamber or to the air cylinder, depending on the brake set-up on the dynamometer. It is important that the cams of this group be lined up with the cams of the center group, so that the charts will run on the fast speed during the application.

At the top of the instrument board are two Esterline Angus recording instruments. The instrument on the left is a pressure recording instrument and records output torque against time. The instrument at the right is a speed recorder, recording speed against time. The pressure-recording instrument is connected by a hydraulic line to a hydraulic cylinder having 1 sq. in. area and normally connected to the torque arm at 1 ft. radius, so that the recorded pressure represents output torque in lb.-ft. There is available also a cylinder having 3 sq. in. of area for use with brakes having output torque of more than 1500 lb.-ft., which gives a range up to 4500 lb.-ft. By moving the cylinder out to the end of the torque arm, at a radius of 1  $\frac{1}{3}$  ft., the torque-recording range is increased to 6000 lb.-ft.

### Speed Recorder

The instrument at the right is a speed recorder electrically connected in parallel with the speed indicator mounted over the variable delivery pump to the tachometer generator, and is driven by 1 to 1 gearing from the mainshaft of the dynamometer. This instrument has a range of 0 to 1000 r.p.m., corresponding to the speed range of the dynamometer. Each of these instruments is driven internally by a synchronous motor. Each instrument is provided with extra gears which make it possible to get chart speeds of  $\frac{3}{4}$ ,  $1\frac{1}{2}$ , 3, 6, or 12 in. per hour, and  $\frac{3}{4}$ ,  $1\frac{1}{2}$ , 3, 6 and 12 in. per minute, when run on their own synchronous motors. By providing an outside synchronous motor with the proper gearing it is possible to get chart speeds of  $\frac{3}{4}$ ,  $1\frac{1}{2}$ , and 3 in. per second. It is customary to operate at  $\frac{3}{4}$  in.-per-hour chart speed, and during applications at  $\frac{3}{4}$  in. per second. This opens up the chart sufficiently to observe variations as recorded. These two instruments

are run interconnected, with the charts aligned to permit observation of the variations in the torque and the corresponding change in the speed-time curve. From the torque curve the stability of the friction of the material, the change in torque output of the brake with drum expansion, the effect of poor brake setting and the effect of drum distortion can be determined. Also, by observing both charts in combination, the effect on deceleration can be studied.

### The Instrument Panel

Below these two recording instruments on the panel the following instruments are mounted (left to right): A hydraulic-line-pressure gage, an available-air-pressure gage, and a reduced-air-pressure gage. Below the reduced-air-pressure gage is the control handle for regulating the air pressure or the hydraulic-line pressure for brake application. Below these gages, from left to right, are mounted a Brown temperature-indicating instrument, a Brown temperature-recording instrument and a six-point switch for connecting the instruments in parallel to any one of six thermocouples that may be installed in the brake or drum. The temperature-recording instrument is driven by its own synchronous motor through gearing which gives a chart speed of 32 in. per hour. It records intermittently, making a record every 3 seconds. In cases where it is necessary to read every peak temperature the indicating instrument is a check on the recording instrument.

This brake testing machine according to the manufacturers has the following characteristics and permits of the following tests: Details of operation during test may be observed; pressure of brake application is accurately controlled; speed is accurately controlled and recorded; braking effect is not affected by weight transfer; braking torque is measured and recorded during stop; stopping time and variations in deceleration from any speed are recorded; temperature conditions are recorded; influences of weather and road conditions are eliminated; the "human factor" is greatly reduced by the automatic recording; figures for the deceleration of the inertia masses can be converted to corresponding figures for car deceleration; effects of lag in pressure application and of power losses in the brake rigging can be studied.

Here's More on the

# Corrosion-Theory of Cylinder Wear

**R**ATHER interesting views, many of them supported by wide experience, were expressed in the discussion of Harry Ricardo's paper on the causes of cylinder wear and on trouble from cracking of the white-metal linings of crankpin bearings on high-speed Diesel engines, which was presented at a recent meeting of the Institution of Automobile Engineers. That part of the discussion relating to cylinder wear is reviewed herewith.

Tom Thornycroft expressed the view that the load factor had a large influence on the rate of wear. He had data from some hundreds of vehicles which proved that with low load factor and vehicles running only short distances, the cylinder wear is as much as five times as great per mile as in the case of vehicles making long journeys at a reasonable temperature and load factor. Some seven or eight years ago experiments were carried out in America in the laboratory in which in something like 24 hours the cylinder was completely worn out solely by starting and stopping and running a freezing mixture through the jackets. He had operated engines for about 2300 hours in 300-hour runs with very little cylinder wear, but they were run continuously at nearly full load at a reasonable temperature. This, he said, went to show that something other than just erosion was wearing the cylinder. He had found a definite rust film for two or three inches down two cylinders of a London bus engine, which had been

stopped for about 20 minutes after being in service all day.

Years ago, when water was fed to kerosene engines to prevent knocking, cylinder wear was increased to an enormous extent, probably due to corrosion.

W. N. Duff, who has been carrying out some experimental work on cylinder wear for the Institution of Automobile Engineers, said that a great increase in the rate of wear was obtained when the cylinder jackets were kept at a very low temperature. For instance, if the engine was run through a cycle consisting of idling for five minutes on starting, followed by ten minutes at three-quarters load, the wear was eight times as great as when the engine was running at three-quarters load for half an hour, with no lubricating oil supplied to the walls for the first 24 minutes of each run. This test,

together with the pitted appearance of the piston rings and the observed quantity of moisture in the oil, led to the hypothesis that the rate of wear depends on the temperature of the cylinder and that corrosion forms the major part in this picture of wear. From the results of tests on four engines during the last two months a curve of wear as a function of cylinder-wall temperature (Fig. 1) was drawn. Between about 575 deg. and 212 deg. F. the wear is practically constant and also practically independent of the quantity of oil supplied. Below 212 deg. the curve begins to rise and the slope increases very rapidly as the temperature falls. At 120 deg. F. the wear is just eight times that at about 212 deg., and it is interesting to note that the beginning of the bend of this curve corresponds to 200 deg. F., which happens to be the dewpoint of the products of combustion of the cylinder. About one gallon of water is produced for every gallon of gasoline burned; that means a dewpoint of about 200 deg. at one end of the stroke and 120 deg. at the other, and it is at 200 deg. that the wear curve begins to turn. This curve applies to the case of very low lubricating-oil consumption. If more oil is supplied the wear is cut down, as shown by the other curve, which proves that corrosion is aggravated by a shortage of oil.

The speaker said he did not

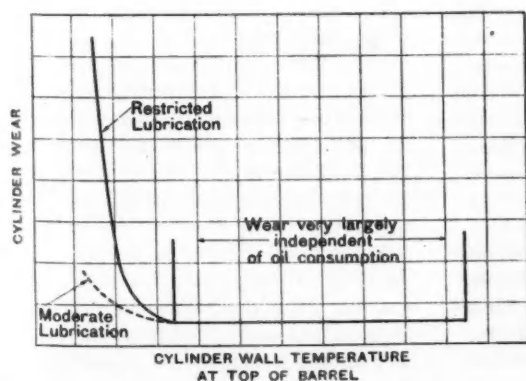


Fig. 1—Cylinder wear as a function of temperature



claim that corrosion accounted for everything, but he had definite evidence that condensation in the cylinder was required to make the wear become appreciable.

G. D. Boerlage said that in their laboratory they had found that wear is influenced greatly by defective combustion which results in sticky, or acid products. This form of combustion, referred to by them as "half-combustion," often results from too high a self ignition temperature of the fuel.

F. R. Banks pointed out that the old gasoline-kerosene engines always showed a high rate of wear. This was usually attributed to high dilution of the crankcase oil, but it could be explained also on the theory of corrosion, since most kerosene engines usually work for quite long periods with relatively inefficient combustion, due to changing over from gasoline to kerosene too soon, or idling the engine on kerosene for extended periods. This would cause products of partial combustion to settle on the exposed surface, and the rate of wear would be exceedingly high.

O. W. J. Watson expressed the view that any weakness in the design of a Diesel engine was accentuated and shown up quickly by the fact that such an engine can have a full load applied to it immediately upon starting up from cold, whereas a gasoline engine must pass through a warming-up period. As to whether corrosion took place, he had observed that if an engine which had been in service were opened up over night, there would be considerable oxidation in a very short time.

### Corrosion Over-Stressed

E. C. Ottaway said he felt that the author had rather overstressed corrosion as a cause of cylinder wear, to the exclusion of other factors. It had been conclusively proven, by a very large number of service tests, that very considerable variations in cylinder wear may be effected by changes in piston design and cylinder material, in the latter case, as far as could be judged, without serious alteration of the corrosion-resisting properties of the iron. He had found, for instance, that by increasing the phosphorus content of the iron from 0.2 to 0.6 per cent, with no other change, the cylinder wear could be improved by 30-40 per cent. The increased phosphorus content slightly improved the corrosion-resisting property of the iron, but the major difference was

in the larger area covered by the hard phosphite in the matrix of the iron. He had found that the rate of cylinder wear was considerably increased by frequent stopping and starting, and to a further considerable extent when the stopping and starting allowed the engine to become cold between periods of running. This latter supported the corrosion theory.

### Chrome-Plated Cylinders

His firm had made experiments with chromium-plated cylinder bores. The chromium plating greatly improved the resistance to wear, but it was difficult to make the process commercial, on account of the difficulty of obtaining a perfectly uniform deposit. The deposit is unmachinable and can be finished only by honing. Grinding is out of the question, owing to the relatively small thickness of the deposit, and honing will not remove sufficient material.

C. B. Dicksee said he had to disagree with the author that the class of service and the engine speed had no influence on wear. Experience under actual service conditions had shown very definitely that wear was greatest in city service and least in services in which great mileages are covered daily.

R. Stansfield said he could not help thinking that the author's estimation of wear from the amount of iron in the lubricating oil based on nearly 10 hours' running was open to serious error, as apart from possible measurement errors, variations in the viscosity of lubricating oil might affect the amount of iron returned to the collecting point. In the case of a low-speed Diesel engine, run for 400 hours under full load, in 50-hour runs on different fuels, measurements of wear on the diameter could not be taken accurately enough after each 50 hours' run to have any meaning, but the ring weight losses in the different runs varied in the proportion of 3 to 1, depending upon the amount of solid matter that could be centrifuged from the different fuels by several successive treatments. The loss of ring weight was not a linear function of the amount of abrasive matter in the fuel; as the amount of abrasive increased, the increase in the rate of wear was reduced.

It appeared that piston material had little or no bearing on cylinder wear and that the piston rings were the culprits, at least indirectly. It had been often observed that

cylinder wear in actual service is three or four times as great as on the bench during the same length of time even though the average engine speed and load must have been appreciably less in service.

Mr. Dicksee said he agreed with the author that corrosion rather than abrasion played the major part in connection with cylinder wear, and he had often observed that on removing the cylinder head from an engine after test, patches of rust were discernible on the cylinder bores, even in cases where the cylinder head was removed while the engine was still warm. It was, of course, necessary to remove the head without having previously turned the crankshaft, otherwise the traces of rust would be removed. The appearance of such rust inevitably meant the removal of a certain amount of iron, and it stood to reason that the more often this condition arose, the more rapid the cylinder wear. This explained why engines which were run intermittently suffered far more from cylinder wear than do engines which are run continuously. Mr. Dicksee said there was no need to look for obscure products of partial combustion to explain this corrosion; carbon dioxide in the presence of moisture was one of the most active rust-promoting agencies, and these two were the normal products of complete combustion.

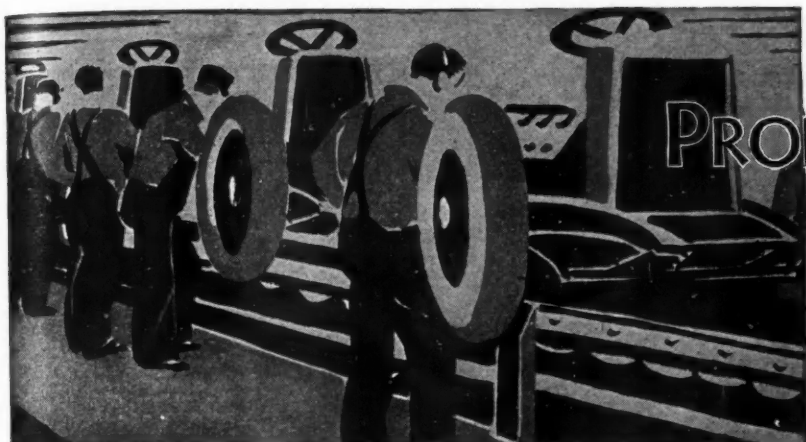
### "Wear Can Be Smelt"

This, however, is contrary to a statement made by G. D. Boerlage, that wear is promoted by the acid product of "half combustion," which had led them to the conclusion that "wear can be smelt."

It will be seen from the foregoing that on the whole the discussion supported the author's view that corrosion plays an important part in cylinder wear and explains the concentrated wear at the upper end of the piston track.

### Cooling Oil

One of the outstanding problems of engine design discussed recently is the matter of properly cooling engine lubricant. A British development noted recently in *The Autocar* (Eng.) is a replacement oil sump of excess capacity. It is heavily ribbed and of a light alloy having high heat conductivity. The 8 hp. Ford and other popular makes are being equipped in replacement.



## PRODUCTION LINES

### Souvenir

About 60 years ago a young implement dealer conceived the idea of a square detachable link that would produce a chain drive easy to service. Out of this idea grew an industry. Some of its high-spots are shown in the Chicago Exposition souvenir handbook distributed by the Link-Belt Co. Many new as well as conventional materials handling devices are described and illustrated. A convenient handbook for anyone who has to do with materials handling.

### Wheel Specifications

Norton Company has done an outstanding job in publishing its handbook on "Wheel Specifications for Grinding Machines." Standard types and standard forms are based upon the grinding wheel simplification code adopted through the cooperation of the Department of Commerce. Special shapes also are included. Don't miss this one if you have grinding machines on the premises.

### N.A.C.C. Says So.

According to *Facts and Figures* for 1933, the automotive industry is the largest purchaser of a number of commodities. Here's the list: Steel or iron—strips, bars, sheets, malleable iron, alloy steels, steel all forms. Then, gasoline, rubber, plate glass, nickel, lead, mohair, upholstery leather. It takes 78 per cent of all alloy steels, 29 per cent of all nickel, 43 per cent of the plate glass.

### Improved Bakelite

*Bakelite Review* for July, 1933 describes a new molding material,

Impact, which is said to have several times the shock resistance of ordinary molding materials. While Impact Molding Material is similar to Bakelite Laminated it can be molded and is therefore adaptable to a wide variety of shapes. The molding technique differs but slightly from the usual methods as the material lends itself to efficient high speed production.

### Engineers Only

Handbook material on Nickel Alloy Steels compressed around the periphery and on the surface of a handy circular slide rule 8-in. in diameter is the latest help from the International Nickel brain trust. The data concerns bars, shafting and simple forgings. Pick the diameter and read directly the specification number of the steel, heat treatment, hardness, and physical properties. Chemical composition of the steel is found on the reverse side. This slide rule and its companion on Nickel Cast Iron will be both useful and decorative over your desk.

### Just Epochal

After some years of work the mature knowledge concerning the application of the statistical method of interpreting numerical data has been finally translated into a form which can be readily understood and used by technical men. No longer will the science of numbers be restricted to a select few such as actuaries and skilled statisticians. To the A.S.T.M. goes the credit for bringing this about. And very soon a simple, concise and understandable manual will be available. Watch for it. Get it as soon as it's off the press.

### New Answer

An expert on tolerance systems tells us about a new plug gage which sounds like a real find. It reads to the tenth of a thousandth. Its purpose is to check the final setting of reamers and broaches. It gives the following information—which we are bound to admit is valuable stuff: if the tool when new cuts oversize, how much? if the tool when new cuts under the high limit, how much? if it cuts taper, how much? Our friend claims that this gage can be produced for about the same price as any good precision gage. How does it sound to you?

### Fiber Anchor

Rawlplugs are boosted as a means of anchoring screws in plaster, cement, brick, metal, glass, etc. It's a cylinder of fiber impregnated with a special cement. As the screw enters, the plug is automatically threaded and expanded into the hole without cutting the material. It is claimed that the plug will not work loose, shear, or lose its grip. Maintenance men take notice.

### Questions N.I.R.A.

Whether the operation of the N. I. R. A. will tend to promote or encourage decentralization has been questioned by the Coatesville (Pa.) Chamber of Commerce. What brought it up is the case of a small manufacturer who feels that the Act will force him to move to a larger city. Reason—small town does not have sufficient skilled labor for his industry while the unskilled aren't worth the minimum wage. Which is but one of the problems that are bound to come up and add to the perplexity of life in general.

—J. G.



# The FORUM

## Early Valve-Seat Inserts In Iron Cylinders

Editor, AUTOMOTIVE INDUSTRIES:

In his article in the May 6 issue of *Automotive Industries*, regarding the role played by the parts manufacturers, Mr. Heldt says he is uncertain as to the source of the idea of using hard, high-resistant materials for valve seats in cast-iron cylinder heads, and maybe I can throw some light on the subject. We all know, of course, that bronze or steel inserts for aluminum cylinders have been employed for some time. About four years ago I was confronted with the problem of finding a remedy for the picking up of free ferrite on valve seats from cast-iron aircraft cylinders. I had been fighting this situation for three or four years previous, due to the failure of the foundry to furnish material containing the percentage of nickel specified. Castings having the specified amount of nickel did not show a particularly bad condition on test, but it was necessary to service a large number of cylinders of a lower content already in service. I learned that the Case Threshing Machine Co. had started to use inserts in its tractor engines and that the Burd High-Compression Piston Ring Co. was furnishing the inserts. I also learned that they were using a molybdenum iron, so I had some made up of the same material for test. This completely eliminated the trouble that had been experienced, and we set about to install inserts in all engines in service.

Later I gave this information to a valve manufacturer, who was in a quandary because the automobile manufacturers were placing the blame for their trouble on the valves. The increased heat brought about by higher outputs was beginning to show the conditions which en-

gines for other purposes had already experienced and corrected.

The picking up of free ferrite is not peculiar to certain grades of cast iron, as I have seen the same phenomena in a milder degree on steel cylinders. When the trouble appeared in the aircraft-engine cyl-

inders, it was recognized and understood, but even then it should not have occurred to such a degree had the material specifications been correctly followed. Once it was found that the specifications were not being followed, it was a matter of finding corrective measures for engines in service, and, as I have pointed out, the same measures used by tractor engine builders was adopted.

GLENN D. ANGLE.

## High-Compression Tests on Ford Car

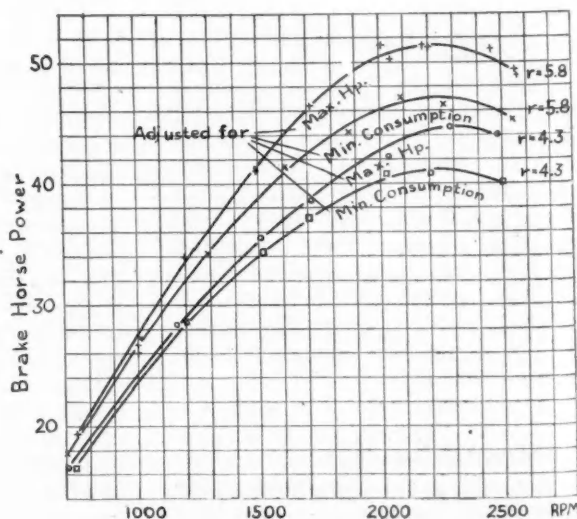
Editor AUTOMOTIVE INDUSTRIES:

We were much interested in the article "Compression Ratio and Fuel Economy" which appeared in your March 18 issue, and which contained data on high compression experiments which we carried out on a Model A Ford car. We presume that your readers are interested in such experiments, and we are enclosing herewith a graph,

Fig. 1, which shows the power outputs and consumptions with various compression ratios, from which the published data were obtained. The experiments were carried out in our testing stations.

We communicated our results to the Ford plants and made the suggestion that higher-compression cylinder heads be designed for use on Ford cars sold in Germany, in

Fig. 1—Horsepower curves of 13/40 hp. German Ford with different compression ratios and different carburetor adjustments





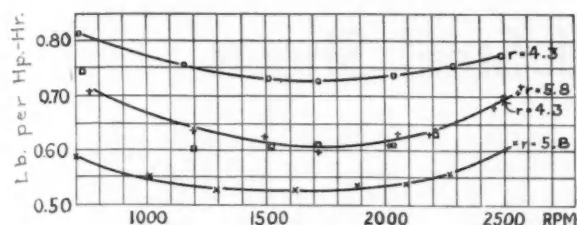


Fig. 1A — Specific fuel consumption curves of 13/40 hp. German Ford with different compression ratios and different carburetor adjustments

high compression. The maximum power output is obtained with a richer mixture, corresponding to about 12 turns of the fuel valve, for both normal and high compression. With this latter adjustment we carried through road tests which made clear the effects of the higher compression as regards more rapid acceleration and reduced consumption. The accompanying table gives the results in detail.

We assume that these results will be of interest to you, as they are of considerable importance in all countries in which anti-knock fuels are widely distributed.

BENZOL-VERBAND,  
Bochum, Germany.

(Figures underneath the curves signify carburetor adjustment)

Fig. 2A—Specific fuel consumption (based on hp. at road wheels) of 14/65 hp. German Ford car with different compression ratios and different carburetor adjustments

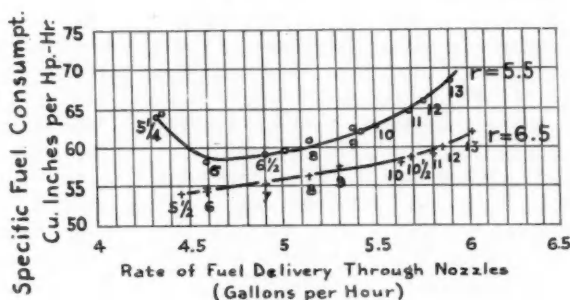
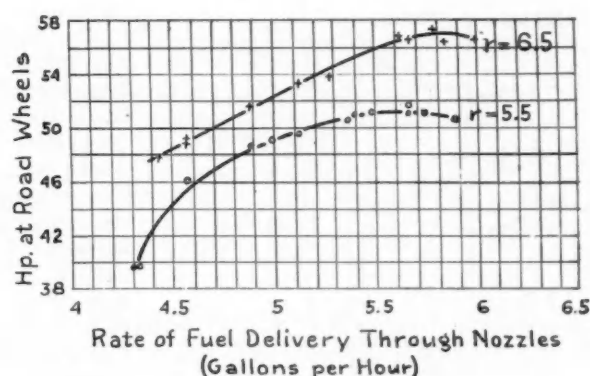


Fig. 2 — Rear-wheel horse-power of 14/65 hp. German Ford with different compression ratios and different carburetor adjustments



view of the availability of anti-knock fuels on the German market. We assume that the "police head" was designed as a result of this suggestion.

It may be of interest to you that our further experiments with the "police head" showed that its compression ratio of only 5.2 gave approximately the same favorable figures for output and consumption as the head we had to use in order to raise the compression ratio of our 8/28 hp. engine. (This is evidently the small-bore European four-cylinder Ford engine. Editor.) In our opinion, this is due to the fact that the "police head" is specially designed for the engine.

In the meantime we have carried through similar experiments with the new Ford eight-cylinder car, in order to take full advantage of our anti-knock fuels. As there is no "police head" for this engine, we ground down the cylinder heads by 0.040 in. and replaced the original 0.060-in. gasket by one of only 0.024-in. thickness, and we were thus able to increase the compression ratio from 5.5 to 6.5. This compression ratio made it possible to save from 8 to 8.5 per cent on the consumption with our German fuels, besides giving an increase in performance, not taking into account the higher calorific value. Fig. 2 shows the output measured at the road wheels and the figures for consumption (related to the former), for various compression ratios and various fuel-valve adjustments, when using our B.V. Aral fuel. These curves show that minimum consumption is obtained with about six turns of the fuel valve, for normal as well as for

## Road-Test Results

Fuel-valve adjustment (turns open)	Ignition advance in crank-angle degrees (fixed)	Time of Acceleration from 6.25 to 37.5 m.p.h. (seconds)	Miles per U. S. gallon consumption
Compression Ratio—5.5			
7	+5	10.4	15.9
8	+5	10.3	17.1
9	+5	10.1	....
10	0	10.2	16.4
Compression Ratio—6.5			
7	0	10.1	17.4
8	-5	10.0	18.7
9	-5	9.9	....
10	-5	9.7	17.3
11	-5	9.7	....

# The Aging of Mild Steel Sheets

(Continued from page 118 in the July 29 issue, from which this page was omitted as the result of a regrettable error.)

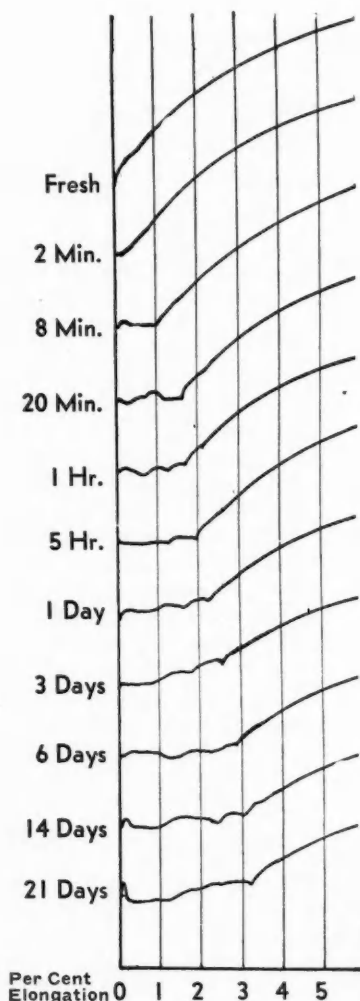
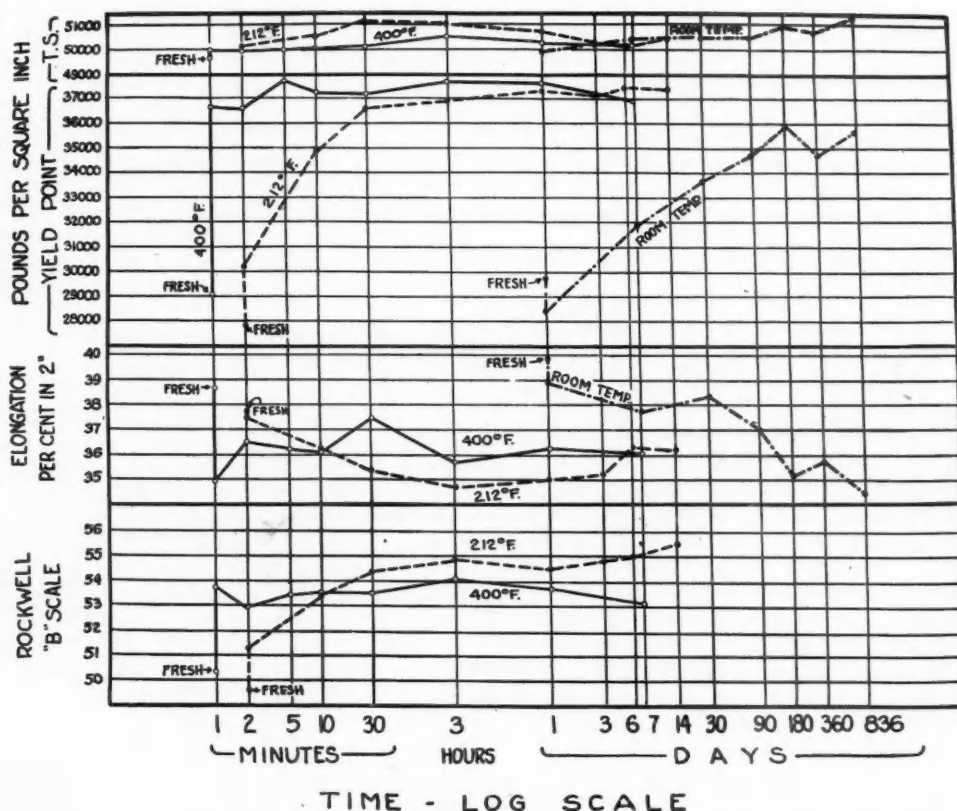


Fig. 6 (Above)—Stress-strain curves of the normalized, box - annealed mild - steel sheets, cold-rolled 1 per cent and aged at 212 deg. F., showing the yield-point portions of the curves magnified

Fig. 7 — Chronological change in tensile properties and Rockwell hardness due to the aging of normalized, box-annealed mild-steel sheets, cold-rolled 1 per cent and aged at the temperatures shown



another series of tests was made on the same material, cold rolled 1 per cent and aged at 212 deg. F., but using an extensometer which magnifies the yield point portion of the curves. Fig. 6 shows the yield point portions of these curves placed one above the other for comparison. It is seen that the flat part of the curve or the "yield point elongation" increases continuously and reaches a maximum after about two weeks at this temperature. A further test, not shown, was made after four months at 212 deg. F., and showed no further change. The severity of the stretcher strains increased on these specimens in a manner comparable to the increase in yield point elongation.

The numerical results of the tensile test as well as Rockwell hardness also give measures of the aging effect. The changes in these properties on material cold rolled 1 per cent are shown in Fig. 7. The relative potency of the different temperatures in causing aging is quite evident; the changes at 400 deg. F. occur much more quickly than those at 212 deg. F. and in turn these are more rapid than those at room temperature. The tensile strength does not suffer as great an increase as the yield point.

The Rockwell hardness and per cent elongation also undergo extremely rapid changes at the higher temperatures. The same changes occur at room temperature but require days instead of minutes for their consummation.

Other tests were made on material cold rolled various other percentages and the same general relationships between time and aging temperature were found to hold. These tests showed that the greater the amount of cold rolling, however, the longer was the time required for the recurrence of a sharp yield point and stretcher straining. Greater amounts of cold rolling can, therefore, be employed to delay the recurrence of stretcher straining, but this procedure can be resorted to only in a limited degree because of the impaired ductility that is also produced by more severe cold working.

In view of the varied and severe requirements that deep-drawing sheets must meet, it is apparent that a full knowledge of the quantitative changes in physical properties accompanying aging is desirable. This applies to both the manufacturer and the user. This need also accounts for the present activity of scientific investigators in this field.

# Relative Fuel Consumption of Diesel and Gasoline Engines

by P. M. Heldt

Engineering Editor, Automotive Industries

INTERESTING data on the relative fuel consumptions of Diesel and gasoline automotive engines are furnished by two recent reports of tractor tests at the University of Nebraska. Both tests were made on tractors of the same make (Caterpillar), carrying engines of the manufacturer's own production. There was no great difference between the engines as regards size (output), and the tests were carried out under the same conditions. In the Nebraska tests the engines are tested under different loads covering substantially the whole range from full load to idling, and the specific fuel consumption is determined for each load. Since practically all tractor engines are fitted with governors, the speeds in the different runs are about the same.

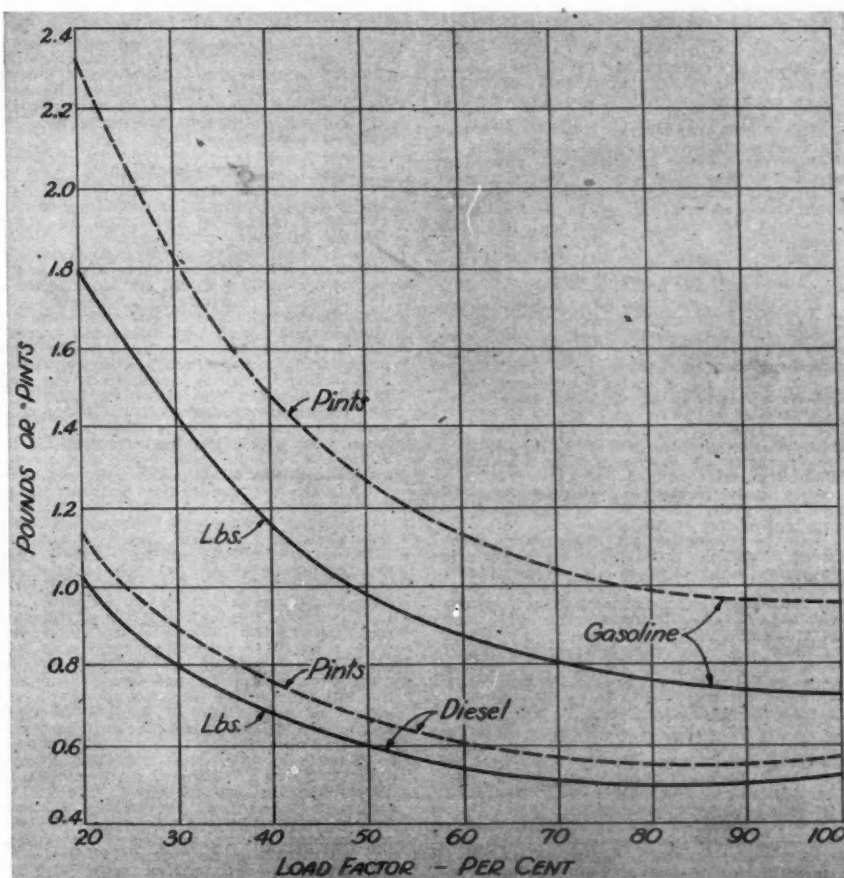
This permits of drawing curves of specific fuel consumption of the engines on a base of proportional load. Specific fuel consumption may be expressed either on a volumetric basis or a weight basis, since the fuel oil used in the Diesel has a considerably greater specific gravity than gasoline, the relative economics of the two engines for any particular load factor are quite different according to which of the two methods of comparison is used.

In the accompanying chart the full-line curves represent the specific fuel consumption of the two engines on the basis of pounds of fuel consumed per horsepower-hour. One difference between the two curves that is immediately apparent is that whereas in the case of the gasoline engine the specific fuel consumption decreases continuously with increase in load, in the Diesel the decrease ceases at about 85 per cent of full load and thereafter the specific consumption increases. This peculiarity of the Diesel engine is well known. An increase in output is effected by increasing the amount of fuel in-

jected per cycle, and if the fuel charge exceeds a certain amount, the efficiency of the combustion process decreases.

At maximum output the specific consumption of the Diesel on a weight basis is about 73 per cent that of the gasoline engine. The fuel oil used in the tests weighed 7.20 pounds per gallon, while the gasoline weighed 6.15 pounds per gallon. Therefore, on a pint per horsepower-hour basis the specific consumption of the Diesel at full load was only 62.5 per cent that of the gasoline engine. The relative

showing of the Diesel with decrease in the load factor. From the standpoint of tractor work, 80 per cent of full power is a rather important point, because this is about the average load factor of tractor engines. For this load factor the specific consumption of the Diesel is substantially 65 per cent that of the gasoline engine on the weight basis, and 55 per cent on the volumetric basis. For a load factor of 50 per cent the specific consumption of the Diesel is about 61 per cent that of the gasoline engine on the weight basis and 52 per cent on the volumetric basis. For a load factor of 25 per cent the specific consumption of the Diesel is 58 per cent that of the gasoline engine on the weight basis and 49.5 per cent on a volumetric basis.



Specific fuel consumptions of gasoline and Diesel tractor engines compared



# Automotive Industry Mobilizes

(Continued from page 144)

age for 12 months, with maximum for any one week of 48 hours. Traveling representatives and executives are exempted from this provision. The body also agreed upon a minimum wage of 35 cents an hour subject to modification in localities where conditions or other

codes determined the minimum rate.

The code brands as unfair competition the following:

(a) Sale below an average, fair and reasonable cost, to be determined by the development of a basic chart of standard account headings.

(b) Misbranding and misrepresentation.

(c) Incorrect classification of wholesalers' customers.

(d) Discrimination between territories or credit terms or prices on split shipments.

(e) Special close-out prices.

## The N. A. C. C. Code of Fair Competition

The following provisions are established as a code of fair competition for the automobile industry:

I: The term "motor vehicles," as used herein means automobiles, including passenger cars, trucks, buses, and other commercial vehicles, for use on the highway.

The term "automobile industry" as used herein includes the manufacturing and assembling within the United States of motor vehicles and bodies therefor and of component and repair parts and accessories by manufacturers or assemblers of motor vehicles.

The term "Chamber" as used herein means National Automobile Chamber of Commerce, a trade association having its office at No. 366 Madison Avenue, New York City.

The term "employees" as used herein means all persons employed in the conduct of such operations.

The term "employers" as used herein means all persons, partnerships, associations and corporations in the automobile industry by whom such employees are employed.

The term "effective date" as used herein means the tenth day after this code shall have been approved by the President of the United States.

The term "expiration date" as used herein means Dec. 31, 1933, or the earliest date prior thereto on which the President shall by proclamation or the Congress shall by Joint Resolution declare that the emergency recognized by Section 1 of the National Industrial Recovery Act has ended.

### Wages and Hours

II: On and after the effective date, and to and until the expiration date:

The minimum wages of factory employees covered hereby shall be at the following hourly rates—

—to adult male factory employees—  
—in cities having 500,000 population or over—43 cents.

—in cities having 250,000 or over or less than 500,000 population—41½ cents.

—in cities or towns having less than 250,000 population—40 cents.

—to male factory employees over 16 and less than 21 years of age, and to female factory employees—

—in the respective localities above mentioned, a differential of 5 cents below the respective hourly rates above mentioned.

Factory employees covered hereby (excluding supervisory staff and all employees engaged in the preparation, care and maintenance of plant, machinery and facilities of and for production) shall work not more than 48 hr. in any one week, and not more than 35 hr. per week averaged for the period from the effective date to the expiration date.

Office and salaried employees covered hereby receiving less than \$35 per week shall work not more than 48 hr. in any one week, and not more than 40 hr. per week averaged for the period from the effective date to the expiration date.

The minimum wages of office and salaried employees covered hereby shall not be less than the following weekly rates:

—in cities having 500,000 population or over, at the rate of \$15 per week.

—in cities having 250,000 population or over, and less than 500,000 population, at the rate of \$14.50 per week.

—in cities or towns having less than 250,000 population, at the rate of \$14 per week.

For all office and salaried employees covered hereby receiving less than \$35 per week, and for all factory employees covered hereby, the wages per hour shall not be less than the respective rates effective for them on Aug. 1, 1933 (said rates having heretofore been raised by the employers effective Aug. 1, 1933, to a point which they estimate is substantially 90 per cent of the respective rates for the same class of work at the same factory as averaged for the year 1929, less adjustment necessary in order to place employers in the same district of the automobile industry on an equality for the same class of labor).

III: Employers in the automobile industry shall not employ any person under the age of 16 years, child labor having at no time ever been a factor in the automobile industry.

IV: Each employer engaged in the automobile industry will furnish approximately every four weeks duly certified reports in such form as may hereafter be provided showing actual hours worked by the various occupational groups of employees and wages paid.

### Administration

V: Under Section 2 (a) of Title 1 of the National Industrial Recovery Act, the Chamber is hereby appointed an agency for the following purposes:

(a) To collect from the members of the automobile industry all data and statistics called for by this Code, or required by the President, or reasonably pertinent to the effectuation of Title 1 of said act, and compile the same, and disseminate among the members of the automobile industry summaries thereof, and allocate among and collect from the members of the automobile industry the expenses necessarily and reasonably incurred in the preparation and presentation of this Code and by the agency in exercising its duties under this Article V, all in such form and manner as said agency shall reasonably prescribe.

(b) To represent the automobile industry in conferring with the Administrator with respect to the application of this Code and of said Act and any regulations issued thereunder, and to hear complaints and if possible adjust the same, and to coordinate the administration of this code with such codes, if any, as may affect any sub-division of the automobile industry or any related industry, with a view to providing joint and harmonious action upon all matters of common interest, and to receive any proposals for supplementary provisions or amendments of this Code or additional codes applicable to the automobile industry or various subdivisions thereof, with respect to wages, hours, trade practices or any other matters affecting the automobile industry or any sub-division thereof. *Provided, however,* that as regards all matters mentioned in this paragraph (b) said agency shall have no power to express any approval or recommendation to the Administrator, or in any way bind the automobile industry or any sub-division

thereof, or do any more than consider the foregoing matters, and confer with the members of the automobile industry affected thereby, with a view to developing the sentiment of the automobile industry, and the arguments for or against such proposals, and arrange for hearings before the Administrator on any proposal which a substantial proportion of the automobile industry desires to present.

(c) The duties of said agency above enumerated shall be exercised by the Chamber by action of its Board of Directors and/or members as provided in its certificate of incorporation and by-laws and the laws under which it is incorporated. Said agency may delegate any of its duties to such agents and committees as it may appoint whose personnel, duties and powers may be changed by said agency from time to time.

VI: As required by Section 7 (a) of Title I of the National Industrial Recovery Act the following provisions effective until the expiration date are conditions of this Code:

(a) That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection; (2) that no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing; and (3) that employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment, approved or prescribed by the President.

### Open Shop

In accordance with the foregoing provisions, the employers in the automobile industry propose to continue the open shop policy heretofore followed and under which unusually satisfactory and harmonious relations with employees have been maintained.

The selection, retention and advancement of employees will be on the basis of individual merit without regard to their affiliation or non-affiliation with any labor or other organization.

VII: As required by Section 10 (b) of Title I of the National Industrial Recovery Act the following provision is contained in this Code: The President may from time to time cancel or modify any order, approval, license, rule or regulation issued under this title.

VIII: By presenting this Code the Chamber and others assenting hereto are not consenting to any modifications thereof and each reserves the right to object individually or jointly to any modified Code.

IX: It is contemplated that supplementary provisions or amendments of this Code or additional codes applicable to the automobile industry or various subdivisions thereof may from time to time be submitted in behalf of the automobile industry or various subdivisions thereof for the approval of the President.

## (f) Consignments.

The Administrative Committee adopted a resolution recommending that a sales contract plan between manufacturers and wholesalers be considered for incorporation in their code by the manufacturer group.

Administration of the plan is by a committee comprised of five representatives each from the National Standard Parts Association, the Motor and Equipment Wholesalers Association, the Automotive Engine Rebuilders Association, the National Automotive Parts Association; also a representative of the Automotive Wholesalers Research Institute and three representatives from the Automotive Electric Association.

The following Executive Committee officers were chosen: S. P. Dean, of the M.E.W.A., chairman; R. W. Boozer, of the N.A.P.A., first vice-chairman, and a second vice-chairman to be named by the A.E.A. John L. Heckman, of the A.E.R.A., is secretary, and H. M. Nigg, of the N.S.P.A., is treasurer.

Details of the plans for administration of the wholesale code, which will affect more than 5000 automotive wholesalers in the United States, are being developed by an Operations Committee consisting of paid employees of the five associations. This committee includes B. W. Ruark, of the M.E.W.A., chairman; O. B. Gault, of the N.S.P.A., secretary; R. G. Patterson, A.E.R.A.; Henry Lansdale, N.A.P.A., and Earl Turner, A.E.A.

The administrative plan contemplates the establishment of National Industrial Recovery Act groups of wholesalers, starting with local groups in city trading areas and working through regional groups with a National Administrative Committee.

The organization of the automotive wholesalers to operate under the National Industrial Recovery Act will be without consideration of any group organizations of any associations now in existence. The national administrative headquarters has been established in the Hotel Statler in Detroit.

So far as automobile dealers are concerned, there came, late in July, a development which practically assures, for the first time, a national organization representative of more than 60 per cent of their numbers enrolled under the banner of the National Automobile Dealers Association and under the leadership of F. W. A. Vesper, its president and manager. Accomplishment of this



Left — G. L. Brunner, president of the M. E. M. A. and secretary of the A. P. & E. M. and, right, W. G. Hancock, N. S. P. A. president and treasurer of the A. P. & E. M.



great objective was made possible at a meeting of the International Association of Automobile Show and Association Managers, which was attended by Mr. Vesper. At that meeting an agreement was reached between Mr. Vesper and more than 30 managers of state and city dealer associations under which the state associations become affiliates of the N.A.D.A., and further providing that membership in the state associations that subscribe to the national set-up of the N.A.D.A. carries with it membership in the national association—the state association in such states being the only avenue for national membership.

The cooperation of the state association managers in this movement assures, immediately, aggressive state-wide organization for the N.A.D.A. in practically all of the most populous states of the United States, with a potential dealer membership for the N.A.D.A. of approximately 50 per cent of all the dealers in the country.

Meetings late in July and early in August are being held in each of the 25 N.A.D.A. districts at which district organization is being effected and in which the dealers are being given an opportunity to advise the National Association as to their opinions concerning the kind of a code that the National Association is to submit to the President.

Experience to date indicates that there will be, first, a basic national code covering the mandatory provisions of the recovery act, such as hours of labor, wages, etc., and possibly one or more of the major competitive factors in automobile retailing such as used car allowances, which may require adjustment in

order to permit dealers to comply with the Government's desires concerning hours and wages and continue on a basis that will insure a chance to operate profitably.

Later, it is expected, there will be an opportunity to develop district or local codes under the national code, in which district or local problems may be attacked.

F. W. A. Vesper, president of the N.A.D.A., said, late in July, that prompt action on the part of the district organizations would probably make it possible for the N.A.D.A. to file its code as early as Aug. 20.

While the N.A.D.A. code is still in the process of being developed, it is understood that there is sufficient unanimity of opinion from dealers in the various groups in the United States that have met to date to provide, among other features, the following:

(A) It will be declared an unfair method of competition to allow more for a used car than it currently sells for in a given market and that average monthly sale prices of all cars for the same make, model and year in a district shall be accepted as maximum allowance figures with such deductions as may be agreed upon for overhead and selling expense and for placing the car in salable condition.

(B) It may be declared an unfair method of competition for dealers to sell new cars for less than the factory f.o.b. price, plus extra equipment; freight and handling charge to point of delivery, plus all taxes. Dealers, furthermore, may be restricted from giving any gratuity, commission, service or accessory for the purpose of inducing a customer to buy a car.

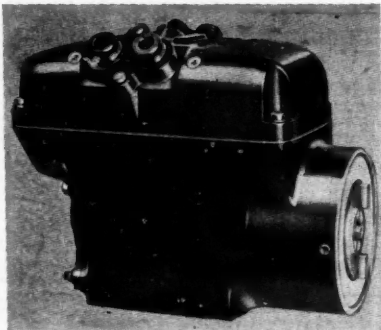


# NEW DEVELOPMENTS

## Automotive Parts, Accessories and Production Tools

### Fairbanks, Morse Magneto With Interesting Features

A new high-tension ignition magneto of the inductor type has been brought out by Fairbanks, Morse & Co., Chicago. The magnet revolves and the coils are stationary. A one-piece rotor construction is employed, the bar magnets and driveshaft being die-cast rigidly in place. The stationary high-tension coil is completely



Fairbanks, Morse ignition magneto, Type RV

sealed and protected, and there are no rotating connections. A complete housing excludes dust, oil and water.

The breaker points are stationary and the interrupter operates at reduced speed. Distributor contacts are of the wiping type, which permits of a totally closed construction. The design is said to combine simplicity with accessibility. A substantial aluminum housing encloses the whole device. Ball-bearing construction is used throughout, sealed, grease packed bearings being used, and no oiling is required. The magneto is built in one, two, four and six-cylinder models and is adapted for installation on existing engines.

### Process Timed With Automatic Switch

An electric timer that lends itself to a multitude of automatic and remote-control applications has been announced by the General Electric Co., Schenectady, N. Y. By combinations of two or more timers, or by using one in conjunction with other types of automatic time switches, it is possible to meet a wide range of process schedules.

The timer, Type TSA-10, is started

by closing a switch. Resetting is automatic when the control circuit is de-energized. The timing period is readily adjustable over a wide range. When used as a process timer it can be arranged to operate a signal or terminate a process at the end of a predetermined period. By the use of relays and timers together, entirely automatic control can be provided for almost any process.

The timer has two scales, graduated in hours or minutes according to the rating of the timer, one having a range three times that of the other. This permits a wide range of time-interval selection in a given timer.

### Light Duty Drill Has Ball Bearing

Light duty, quarter-inch electric drill, equipped with ball bearings on both ends of the armature and with hand wound and formed coils has been brought out by the Independent Pneumatic Tool Co., Chicago, Ill.

The motor is custom built with each coil insulated three times with silk wrapping. The commutator is a separate unit, built upon a brass sleeve



Independent light duty quarter-inch electric drill

that expands and contracts evenly with the copper segments, thus making sure that these segments will not work loose. It has a dust-proof toggle switch placed just inside the handle. Its weight is but five pounds.

The tool runs at a speed of 2200 r.p.m., and has an overall length of 11 1/4 in. The spindle offset is 3/8 in.

### Analyzes Furnace Atmosphere

A combustible gas analyzer, model RZA, for testing furnace atmosphere has been placed on the market by the Bacharach Industrial Instrument Co.,

Pittsburgh, Pa. The scale of the indicator is calibrated directly in percentages of combustible gases.

It operates on the principle of catalytic combustion. A sample of the gas to be analyzed is passed at a constant velocity through a gas cell containing an electrically heated platinum wire. The combustible gases in the sample are burned catalytically along this wire, and the electrical resistance of



Bacharach gas analyzer RZA

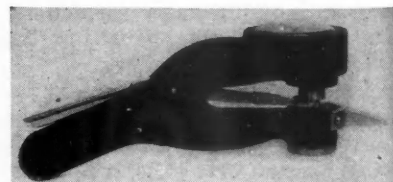
the wire is then compared with that of an identical wire mounted in another cell. This cell contains air and is sealed.

The analyzer is available in two types; one designed for portable service, and a second type for permanent installation. Complete information on the latter type will be furnished upon request.

The portable type is intended chiefly for intermittent tests, although it is capable of operating continuously for a duration of 48 hours. Since the instrument is a self-contained independent unit which requires only an electrical connection, it is well adapted for portable service.

### Checks Thickness Automatically

Federal Products Corp., Providence, R. I., has just placed on the market the Model 644 thickness gage which is fully automatic in operation. A feature of the instrument is the ability to clamp the work solidly before the measuring anvils come in contact



Federal 644 thickness gage

with the work. The gage has two 3/4-in. diameter aligning surfaces, the stationary gaging point being located at the bottom while the upper surface



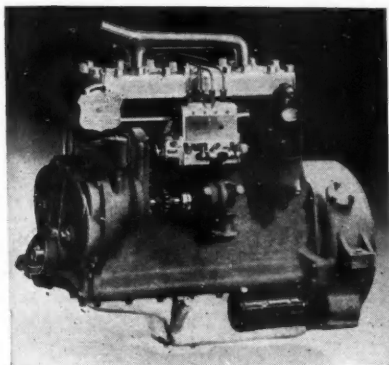
carries the point which makes contact with the dial indicator.

In operation, the work is inserted between the anvils and clamped by releasing the lever on the handle. This brings the work in perfect alignment with the gaging points, the thickness being read directly from the dial indicator.

The projecting triangular shoe under the lower anvil is simply a guide to facilitate the locating of the work between the anvils. The dial indicator is equipped with two tolerance hands which can be set for any desired limits.

### Mono-Valve Type Diesel Engine

A new design of automotive Diesel engine described as a mono-valve type, has been developed by the American Diesel Engine Co. of Oakland, Cal. Cylinders are of L-head type. The engine will be available in from one to eight cylinders, all models having the same cylinder size, pistons, rings, connecting rods, etc. The eight-cylinder model is said to develop 75 hp. at 1200 r.p.m. and 125



Mono-valve engine of American Diesel Engine Company

hp. at 2000 r.p.m. It weighs approximately 14 lb. per hp. and consumes 0.44 lb. of Diesel fuel per hp.-hr. The engine is the design of Chas. A. Winslow, general manager of the company.

### Speedway Announces Automatic Oilers

The Speedway Mfg. Co., Cicero, Ill., makers of Speedway portable electric tools, announces a line of automatic oilers. These are of two types: "Constant Level" and "Thermal." The constant level oilers are designed especially for use on electric motor bearings and other reservoir bearings with oil-ring, packing, or ball or roller bearings where oil in the reservoir should be maintained at a determined level. This is done by means of a tube which permits air to enter and oil to flow from the reservoir when the

## NEW DEVELOPMENTS

### Automotive Parts, Accessories and Production Tools

level of oil in bearing reservoir drops below the fixed and proper level.

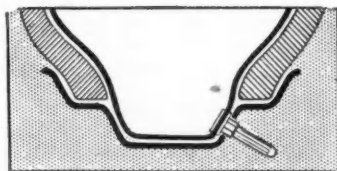
The thermal oilers, designed for use on sleeve bearings of the open type, are operated wholly by change in the bearing temperature. Heat in the bearing causes an expansion of the air in the thermal chamber, forcing small quantities of oil, just enough, to the bearing. Both types have a visible oil supply.

### Dill Easymount Tire Valve Assembly

The Dill Manufacturing Company, of Cleveland, Ohio, announces the development of the Dill Easymount valve assembly for tires used on drop center rims.

The entire valve assembly may be inserted through the valve hole in the rim and the tire mounted without removal and reapplication of any part of the complete assembly. It is claimed that when a tire goes flat, the entire valve assembly pulls back into the rim well without strain on the tube at the valve and without injury to the tube. The Dill valve assembly, it is stated, adds to the appearance of tire and wheel.

The valve cap and dust cap are in one unit which is short and small in diameter and incorporates a floating valve cap which, when attached to the valve stem, seals the stem and permits sliding the dust cap shell up and down to extend the length of the valve assembly by approximately 2 in. This feature makes possible the necessary valve length for ease in mounting the tire on the rim. A hexagonal nut of

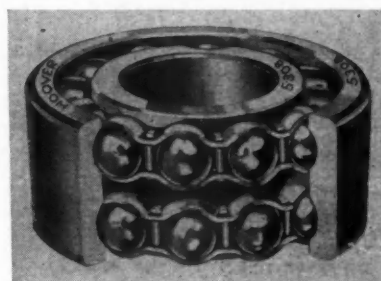


Dill valve assembly mounted

more than standard thickness protrudes through the rim hole and is counter-bored so that the cap, when pushed down, enters the counter-bored portion of the rim nut to make a snug, substantial fitting with smooth highly polished chromium surface that completely encases the valve stem and provides protection against injury to the tube when the valve assembly is pulled back into the rim by a "flat" tire.

### Hoover Makes Double Row Bearings

The Hoover Steel Ball Co. of Ann Arbor, Mich., announces the production of double row annular ball bearings according to S.A.E. standards in the light, medium and heavy series,



These bearings are of the deep groove type

identified as No. 5200, No. 5300 and No. 5400 series.

These bearings are of the deep-groove type, having no filling slots or interruption of raceways, which makes possible a large thrust capacity in either direction, in addition to the radial capacity.

Formed steel retainers of the riveted type are used for spacing the balls, and the bearing in its entirety, is produced from electric furnace high carbon chrome alloy steel, according to S.A.E. analysis No. 52100.

### Improved Goodyear V-Belts For Worthington Drive

A new Goodyear Emerald Cord V-Belt is being announced by Worthington Pump & Machinery Corp., Harrison, N. J., in connection with the Worthington Multi-V-Drive. Goodyear belts have been standard on this drive since its introduction.

Two variations of the new construction are available. Nos. 0, 1 and 2 sizes have one endless cord in one plane, and Nos. 3 and 4 sizes have two endless cords in two planes. All cords are completely embedded in rubber, thus affording full insulation for the control of internal heat. The tension and compression sections of the belt are composed of rubber, with layers of fabric distributed through the compression section to prevent excessive flexibility.

## Assumption of After-Market Activities Condition of M.E.M.A.—A.P.E.M. Merger

**M.E.M.A. Directors Approve A.P.E.M. Code and Recommend Adoption by Members—Say Existing Arrangements for Joint Show Were Not to Be Changed as Result of Merger**

NEW YORK—Directors of the Motor and Equipment Manufacturers' Association at a special meeting held in the Hotel Ambassador, New York, on Aug. 2, reiterated their stand in favor of a merger of the M.E.M.A. and the newly organized A.P. & E.M., providing the various after-market activities conducted by the M.E.M.A., over a period of many years, be continued and expanded by the various divisions of the new A.P.E.M. which logically would be interested in such activities.

The directors also voted to approve and to recommend to members of the M.E.M.A. the A.P. & E.M. code for purposes of complying with the National Recovery Act whether or not a merger is effected; also they went on record to the effect that it was their understanding that officials of the A.P. & E.M. had agreed that there would be no disturbance in the present arrangements for conducting the 1933 joint trade show in Chicago.

Finally, a committee consisting of president George L. Brunner, Brunner Mfg. Co.; W. M. Albaugh, Thompson Products, Inc.; M. T. Rogers, Multi-bestos Co.; and F. G. Wacker, Automotive Maintenance Machinery Co.; was named to meet with a similar committee from the A.P. & E.M. for the development of a merger agreement which can be submitted to all members "in the interests of all factors in the automotive parts and equipment industries." In taking these steps the directors indicated that the establishment of six product divisions in the A.P.E.M. would have no point or value whatever if five of these divisions now selling the after-market would not continue and expand their traditional after-market activities and would have to depend on other associations to do that work for them.

A resume of the history of negotiations between the M.E.M.A. directors and organizers of the A.P.E.M. is being prepared for submission to all M.E.M.A. members. This resume will reaffirm the belief of the M.E.M.A. that the automotive parts, accessories, equipment, tools and chemical industry should be organized into one strong association which to all intents and purposes can be the A.P. & E.M. but no such association can be recommended unless provisions are made to give equal representation to all branches of the industry in the formation of policies and the development of activities.

"Any impression to the effect that the extensive after-market activities of the M.E.M.A. will be abandoned, is decidedly erroneous," Brunner de-

clared on Friday of last week. "In their preliminary action at Detroit our directors specifically stated in their resolution favoring the A.P. & E.M. set-up that the various divisions of the new organization would continue to conduct any activities they might care to. When this action was taken our directors specifically had in mind the annual wholesale trade show as well as the special activities which have been conducted by individual divisions. In other words, five divisions of the new A.P. & E.M. will include manufacturers who are definitely interested in after-market activities and all of these divisions will take part in the Joint Trade Show originally planned by the M.E.M.A. and other associations.

"The M.E.M.A. Credit Department, with its manufacturers' and wholesalers' divisions, which have been operating continuously for 26 years,

(Turn to page 172, please)

### Auburn Loss \$1,109,557

AUBURN, IND.—Auburn Automobile Co. and subsidiaries report a loss of \$1,109,557 after taxes, and charges, for the six months ended May 31. For the quarter ended May 31, the company reports a net loss after depreciation, Federal taxes, and interest, of \$532,091 compared with a loss in the previous quarter of \$577,466 and \$151,987 loss in the quarter ended May 31, 1932.

## June U. S. Car Registrations of 174,910 Put First Half 3 Per Cent Over Last Year

**Gain Over May is 8.7 Per Cent and Over June, 1932, 17.1 Per Cent—Truck Sales Beat May by 11.1 Per Cent and June Last Year by 30 Per Cent**

DETROIT—Registrations of new passenger automobiles in the United States in the first six months of 1933 totalled 682,367 units, exceeding the 1932 total of 663,625 units by almost three per cent, it was revealed today in the national weekly motor car sales report issued by R. L. Polk & Co.

Most of the excess was rolled up in June, the report showed. June sales of new passenger cars totalled 174,910 units, well above the best estimates for the month. The total was 8.7 per cent ahead of the 160,242 new cars sold in May and 17.10 per cent above the 148,752 units sold in June last year. All figures were based upon official registration figures

in the 48 states and the District of Columbia.

Although the 1933 six months total of new truck sales came just short of equalling the total for last year, the figures released by Polk showed that new truck sales are increasing at a faster rate than passenger car sales.

The June total of truck sales was 23,524 units, which was 11.1 per cent over the 20,925 units total of sales in May and 30 per cent more than the 17,876 total of sales in June last year.

Total sales in the first six months of 1933 were 92,830 as compared with 100,564 in the same period last year.



## July Estimate of 235,000 Puts '33 Output within 160,000 of Production in All of '32

Total Is 10 Per Cent Behind June but Double July 1932—Domestic Retail Sales about 5 Per Cent under June as Seasonal Peak in Sales Is Passed

By Athel F. Denham

Field Editor, Automotive Industries

DETROIT — With production reports still incomplete, indications are that July output of motor vehicles in the United States and Canada will total roughly 235,000, making it the second best month the industry has had in two years. The total is approximately double July, 1932, when output was 117,000 but is 10 per cent behind the June production of 260,545 units.

For the first seven months of 1933, the July estimate makes the industry's total 1,275,000, a gain of 24 per cent over the same period last year when output amounted to 1,028,000, and bringing 1933 production to within 160,000 of the 12-month 1932 total of 1,431,000 cars and trucks.

July retail deliveries in the United States on the other hand are not expected to show as sharp a drop from June, an estimate based on reports so far available placing the decrease at roughly five per cent.

With definite indications now discernible that the seasonal sales peak has been passed, dealers generally are assuming a more cautious attitude and cutting shipping orders to factories down to immediate requirements. This normal seasonal tendency did not become apparent until the last few weeks and, of course, accounts for the larger drop in production than in retail sales.

When the deal was announced, Mr. Manning said, "This acquisition was made as an additional step in the direction of developing the company's manufacturing facilities for the building of various units of transportation."

With the automobile and aircraft interests of the Cord organization, this new development puts it in a position to write "Land, Air and Water" before its group of enterprises.

The New York Shipbuilding Corporation is one of the oldest concerns in its line in the United States. It recently turned out the liners Washington and Manhattan for the United States Lines. The balance sheet of the company as of December 31 last showed total assets of \$15,547,805.

### Federal Reduces Loss

DETROIT—Federal Motor Truck Co. sustained a net loss of \$182,707 after all charges in the six months ending June 30, compared with a net loss of \$298,638 last year.

Individual company reports follow: Plymouth reports July production of roughly 31,000. Dealer orders August 1 totaled 11,000.

DeSoto shipments totaled 3500, an increase of 60 per cent over June and the best July in the company's history.

Dodge passenger car shipments amounted to 11,064 compared with 2105 last July; trucks total 3158 against 1019 last year. Dodge retail deliveries during July numbered 10,840 cars and 2800 trucks.

Hupmobile shipments of 701 were 62 per cent over last July; exports were 35 and Canadian shipments 100 per cent ahead.

General Motors sales are estimated by the writer at roughly 98,000 units, with Buick, Pontiac and Oldsmobile close to June figures and well ahead of last July.

Ford production is estimated at roughly 60,000 units in July.

Graham shipments approximated 1200 for July.

Hudson reports July sales to consumers were approximately 10 per cent ahead of June as a result partly of introduction of deluxe models with complete equipment. July was the best month for Hudson since July, 1931, with sales in the week ending July 29 approximately double corresponding week of last year.

## Gen. Johnson Assigns Motor Groups to Lea

Will Preside at Code Hearings—Muir to Hear Highway Transport Codes

WASHINGTON, D. C. — N.R.A. Deputy Administrator Lea has been assigned to preside at hearings held on codes presented by the automotive industry by Administrator Hugh Johnson. Hearings on codes presented on highway truck and bus transportation will be under the jurisdiction of Malcolm Muir, deputy administrator.

Mr. Lea was president of the Moline Plow Co. at the time General Johnson was associated with that company. During his connection with the Moline company, it had as one of its divisions the Stephens Motor Works which produced the Stephens car. This former connection with the motor industry may have influenced Gen. Johnson in his selection of Mr. Lea. During the war, Mr. Lea was in charge of animal transportation in the War Department's division of purchasing, storage and transportation. At the time of his appointment as deputy administrator, Mr. Lea was president of the Continental-Illinois Bank and Trust Co., Moline.

Mr. Muir, who will preside at the hearings on highway transport codes, is president of the McGraw-Hill Co., publishers of business papers. He has been a leader in the business publishing field for several years and has closely followed developments in the fields which the papers published by his company serve.

## Cord Buys Control of N. Y. Shipbuilding

NEW YORK—Control of the New York Shipbuilding Corporation has been taken over by financial interests headed by E. L. Cord of the Cord Corporation. Mr. Cord was elected chairman of the board and C. L. Bardo, president. L. B. Manning is to be chairman of the executive committee which comprises also Mr. Cord and Mr. Bardo.

## Childs Heads New Auto-Aero Division

WASHINGTON—Official announcement was made today by Department of Commerce that the automotive division and the aeronautics trade division of the Bureau of Foreign and Domestic Commerce have been consolidated into one division to be known as the Automotive-Aeronautics Trade Division. A. W. Childs, formerly chief of the automotive division, has been placed in charge of the new unit. "The consolidation of the two divisions was due," the department said, "to greatly curtailed funds and also to the fact that the work of the two units is so fundamentally similar that it is felt the merger involves no loss in essential services required by business."

Leighton W. Rogers, formerly chief of the aeronautics trade division, resigned some time ago to accept the position of executive vice-president of the Aeronautical Chamber of Commerce of America, Inc., New York.



# Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

## Contra-Seasonal Trend

Although this is the time of year when seasonal declines in trade occur, the recent gains in general business were maintained last week. The acceptance of the blanket code throughout the country is rapidly increasing employment and wages.

The Guaranty Trust Company's index of business activity for June stood at 70.3, as against 62.0 for May and 54.6 a year ago. The company's index of wholesale commodity prices on July 15 was 53.0, as against 47.4 a month earlier and 35.2 a year earlier.

## Carloadings Up Again

Railway freight loadings during the week ended July 22 totaled 648,914 cars, which marks an increase of 708 cars above those during the preceding week, an increase of 147,002 cars above those a year ago, but a decrease of 93,567 cars below those two years ago.

Production of electricity by the electric light and power industry in the United States during the week ended July 22 was 15.4 per cent above that a year ago.

## Balance of Trade

Merchandise exports during June totaled \$119,900,000, as against \$114,148,000 a year ago. Imports amounted to \$122,000,000, as against \$110,280,000 a year ago. Exports during the

first half of this year totaled \$669,475,000, as against \$840,012,000 during the corresponding period last year, while imports amounted to \$591,931,000, as against \$746,786,000.

There were 25,540,504 cotton spinning spindles operated at some time during June, as against 24,571,498 during May and 20,646,966 a year ago.

## Prices Decline

Professor Fisher's index of wholesale commodity prices for the week ended July 29 stood at 69.6, as against 70.4 the week before and 68.8 two weeks before.

After the sharp break during the preceding week, the stock market last week was unsettled, with a strong tendency to rally. Part of the severe losses of the week before was recovered. The commodity markets also showed a strengthening tone. The New York Stock Exchange was operating under shorter trading hours, and consequently trading was on a greatly reduced scale.

## Reserve Bank Position

The consolidated statement of the Federal Reserve banks for the week ended July 26 showed a decrease of \$2,000,000 in holdings of discounted bills and an increase of \$10,000,000 in holdings of Government securities. Holdings of bills bought in the open market remained unchanged. The reserve ratio on July 26 and the two weeks preceding was 68.4 per cent.

shares common. This compares with net profit of \$55,887 or 56 cents a share on common stock in the preceding quarter and net profit of \$132,710 after charge and depreciation but before Federal taxes, for second quarter last year.

Net profit for the six months ended June 30, was \$237,489, after all charges and estimated Federal taxes equal after preferred dividends to \$2.43 a share on common against net profit before Federal taxes, of \$228,826 for first six months last year.

## Toledo Employment in Ten Week Gain

Codes Expected to Add 1,000 Workers in Automotive Plants

TOLEDO—Effects of the shortened work week and drive to put more men to work was shown in Toledo automotive industries when employment gained 803 up to a total of 15,186 for 51 plants which make a weekly report and indications were that at least a thousand new jobs would be created on Aug. 1 through President Roosevelt's re-employment blanket agreement.

The Chevrolet Motors Ohio Co. will start on the five-day week in keeping with the new automotive code at once, it was announced.

Willys-Overland Co. is also expected to adhere to the code as L. A. Miller, receiver, was one of the executives who signed the document in Detroit last week. Code requirements, however, will be discussed with Federal Judge George P. Hahn before being actually made effective in the plant.

In these two plants approximately 5,300 workers are affected.

About as many more will be governed by the parts and equipment makers' code when it is effective, it was indicated here.

Employment in Toledo automotive plants has shown a steady gain for ten consecutive weeks. Electric power consumption is up two per cent over June and 25 per cent above last July.

## Faulkner Names O'Rourke Pierce Sales Manager

BUFFALO, N. Y.—The appointment of Thomas J. O'Rourke as general sales manager of the Pierce-Arrow Motor Car Company was announced today by Roy H. Faulkner, vice-president in charge of sales. Simultaneously Mr. Faulkner also announced the appointments of G. D. Aberdeen and Kenneth Strachan as assistant general sales managers.

Because of his unusual record of service with Pierce-Arrow, covering a period of 26 years, Mr. O'Rourke enjoys the acquaintanceship of practically every Pierce-Arrow distributor, dealer and salesman in the United States. He has served in a number of important capacities in the factory

organization. For a considerable period he was passenger car sales manager. During the past four years he has been assistant to Mr. A. J. Chanter, president of the company.

Mr. Aberdeen has been connected with the sales division of the Pierce-Arrow company for sixteen years, while for the past five years Mr. Strachan has been associated with Pierce-Arrow's territorial development.

## Parker Profits Larger

DETROIT—Parker Rust Proof Co. has reported net profit of \$181,601 after depreciation and other charges, including estimated Federal taxes, for quarter ended June 30, 1933, which is equivalent after preferred dividend to \$1.87 per share on 95,735 no par

## Hudson Earns \$164,540 In Second Quarter

DETROIT—Hudson Motor Car Co. and subsidiaries report a net profit of \$164,540 after all charges, for the quarter ended June 30, 1933, against a net loss of \$1,866,307 in the corresponding quarter last year. The company's holdings of Government securities and cash on June 30, were more than \$1,000,000 higher than on December 31, 1932.

## John S. O'Dougherty

DETROIT—John S. O'Dougherty, manager of the Pittsburgh plant of the Federal Mogul Co., died July 26.

## Chrysler Earns \$7,785,616 in 2nd Quarter Declares 50¢ Special Common Dividend

NEW YORK—A net profit of \$7,785,616 for the second quarter of 1933 was earned by the Chrysler Corp. This is equivalent to \$1.80 per share. The report for the first quarter of 1933 showed a net loss of \$3,038,082 and that for the second quarter of 1932, a net profit of \$1,186,052 or 27 cents a share. The net income for the first half of this year was \$4,747,534 or \$1.10 a share on the 4,384,392 shares of capital stock outstanding. In the same period of 1932 there was a net loss of \$880,432.

As a result of the strength shown in the second quarter, a special dividend of 50 cents a share was declared payable on September 15 to stockholders of record, August 15. The last previous dividend, amounting to 25 cents, was paid on earnings in the last quarter of 1932.

On June 30 the cash and marketable securities of the major company and its subsidiaries amounted to \$55,247,189, as compared with \$53,761,136 one year ago. Total current assets increased during the past six months' period to \$85,935,285, and current liabilities equalled \$28,776,047. These two figures compare with \$76,455,874 and \$10,821,762 on the June 30, 1932 report.

In regard to sales it can be said that the business done in the second quarter of this year was 147 per cent better than that in the first quarter. Total sales for the first half of 1933

amounted to \$114,771,203 as against \$90,098,745 in the first six months in 1932. Sales cost for the first six months of this year was \$98,321,015, compared with \$78,771,268 for the period in 1932. Operating income was \$16,450,188 against \$11,327,477.

With a total of 217,614 units of passenger cars, commercial cars and other products of the corporation sold to distributors and dealers and net earnings of \$4,747,534 there is shown an apparent profit of \$21.81 per unit.

A comparison of the total current assets, liabilities and working capital on June 30, 1933, with those shown on December 31, 1931 and 1932 follows:

	June 30 1933	Dec. 31 1932	Dec. 31 1931
Current Assets	\$85,935,285	\$65,581,797	76,320,111
Current Liabilities	28,776,047	16,395,380	11,327,696
Working Capital	57,159,238	49,186,417	64,992,415

### Borg-Warner Earnings \$335,171 in First Half

CHICAGO—Sharp appreciation in earnings and improvement in financial position were revealed in the report of the Borg-Warner Corp., issued by Charles S. Davis, president, following a directors' meeting at which the regular \$1.75 quarterly dividend was declared on preferred stock.

For the three months ended with June, the company earned \$717,153 after all charges, equal to 57 cents a

share on the common stock after preferred dividends. For the June, 1932, quarter the company's net income was \$265,741 or 18 cents a share.

Net earnings for the first six months of 1933 were reduced to \$335,171, because of net loss of \$381,981 in the first quarter. After preferred dividends the six months net equals 18 cents a common share. Cash, United States Governments and other marketable securities, less reserves, were \$8,482,740 as of June 30 last, compared with \$7,000,000 on December 31, 1932.

### Packard in Black In Second Quarter

DETROIT—Packard Motor Car Co. and subsidiaries have reported for quarter ended June 30 net profit of \$21,953 after all charges including depreciation, compared with net loss of \$1,131,823 in the preceding quarter and a net loss of \$949,144 in the second quarter of 1932.

For the six months ended June 30, 1933, net loss was \$1,109,870 after all charges, against \$2,513,127 in the first six months of last year.

Current assets as of June 30, totaled \$19,764,934, including \$14,500,555 cash government and marketable securities, and current liabilities \$2,458,605 compared with current assets of \$23,076,964 with \$13,463,845 cash government and marketable securities and current liabilities of \$2,892,352 on June 30, 1932.

## U. S. Motor Vehicle Exports Increase 30 Per Cent in First Half

Exports, Imports and Re-Imports of the Automotive Industry for June and Six Months Ended June, 1933 and 1932

	1933		June 1932		Six Months Ended June 1933			
	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories.....	.....	\$6,943,998	.....	\$7,026,878	.....	\$41,559,369	.....	\$50,936,473
Motor trucks, buses and chassis (totals).....	2,478	1,234,717	1,387	664,424	16,325	7,260,590	12,331	5,800,172
Under one ton.....	283	103,054	142	41,141	1,870	539,338	1,346	353,247
One and up to 1½ tons.....	1,615	797,573	1,036	415,886	12,437	4,672,570	9,377	3,712,587
Over 1½ tons to 2½ tons.....	279	210,944	136	105,276	1,529	1,179,809	1,088	882,834
Over 2½ tons.....	64	114,647	63	96,128	312	783,936	431	736,121
<b>PASSENGER CARS</b>								
Passenger cars and chassis.....	4,757	2,423,143	2,972	1,829,317	33,620	16,252,757	26,233	15,469,548
Low price range \$850 inclusive.....	4,423	2,050,362	2,499	1,295,747	31,259	13,548,800	21,996	10,534,837
Medium price range over \$850 to \$1,200.....	196	189,713	272	250,529	1,382	1,334,661	2,451	2,353,466
\$1,200 to \$2,000.....	68	96,680	96	123,257	595	889,826	899	1,182,168
Over \$2,000.....	28	72,696	55	138,510	150	386,883	473	1,235,622
<b>PARTS, etc.</b>								
Parts except engines and tires.....	.....	1,840,013	.....	1,910,751	.....	9,686,603	.....	13,168,168
Automobile unit assemblies.....	.....	900,022	.....	1,303,839	.....	5,315,001	.....	6,950,642
Automobile parts for replacement (n.e.s.).....	.....	22,414	9,339	15,709	79,225	120,410	38,451	76,562
Automobile accessories.....	13,956	85,254	.....	85,472	.....	414,808	.....	313,821
Automobile service appliances.....	.....	283,490	5	19,757	199	2,696,251	61	597,959
Airplanes, seaplanes, and other aircraft.....	22	21,177	.....	100,335	.....	125,564	.....	646,860
Parts of airplanes, except engines and tires.....	.....	.....	.....	.....	.....	.....	.....	.....
<b>INTERNAL COMBUSTION ENGINES</b>								
Stationary and Portable:								
Diesel and Semi-Diesel.....	1	9,521	3	12,000	11	39,579	23	121,312
Other stationary and portable:								
Not over 10 hp.....	223	15,548	369	24,371	1,187	83,675	2,154	143,437
Over 10 hp.....	36	24,628	101	23,003	305	139,015	375	209,212
Automobile engines for:								
Motor trucks and buses.....	84	13,500	242	32,030	998	139,639	1,457	219,066
Passenger cars.....	2,502	150,025	2,017	136,469	12,176	763,945	14,882	1,183,015
Aircraft.....	40	85,998	499	78,950	716	607,045	630	300,860
Accessories and parts (carburetors).....	.....	88,171	.....	113,280	.....	474,456	.....	681,836
<b>IMPORTS</b>								
Automobile and chassis (dutiable).....	44	50,948	42	10,351	226	115,330	223	145,724
Other vehicles and parts for them (dutiable).....	.....	9,055	3,267	4,385	1	67,952	51,714	24,919

## New Departure Effects Second Wage Increase

BRISTOL, CONN.—Frederick G. Hughes, general manager of the New Departure Manufacturing Co. has announced that, effective August 1, all hourly wage rates and salaries of \$1,800 or less per annum were increased ten per cent.

Mr. Hughes further stated that this additional wage increase is over and above the five per cent increase which was put into effect June 12, and substantially restores wage rates to the level prior to the depression.

This increase affects 3750 employees of whom 2000 have been reemployed since April 1.

## Mack Loss Decreased

NEW YORK—Mack Trucks, Inc., reports a net loss after charges of \$482,110 for the first half of 1933 against a loss of \$516,943 in the same

period in 1932. Net loss in the June quarter was \$115,202, compared with losses of \$366,908 in the preceding quarter, and of \$203,872 in the corresponding 1932 quarter. The company reports that it operated at a profit in June for the first time since May, 1931.

## B-O-P to Hold Sales Meeting in Chicago

CHICAGO—Buick-Olds-Pontiac will hold a convention of its field organization at the Palmer House in this city on Aug. 7, 8 and 9. The meeting was promised the organization if it secured the national quota for May and June, which it did with a margin of 53½ per cent to spare.

More than 500 guests representing the eight sales regions and the company's 38 zone and branch offices, will join with the district representatives at this meeting.

## S-W President to be Elected August 24

CHICAGO—Election of a new president of the Stewart-Warner corporation to succeed C. B. Smith, who resigned last Monday, is scheduled to take place at the next meeting of the board of directors August 24. J. E. Otis, Jr., was elected executive vice-president of the corporation at the meeting of the board Monday and will fill the position of executive head until the election.

## Ethyl Premium Cut

NEW YORK—Oil companies marketing ethyl gasoline, the largest selling brand of motor fuel in the world, have reduced the premium on this fuel to two cents above the price of regular gasoline, it is announced by the Ethyl Gasoline Corp., owned jointly by the General Motors Corp. and the Standard Oil Co. of New Jersey.

# Automotive Oddities—By Pete Keenan

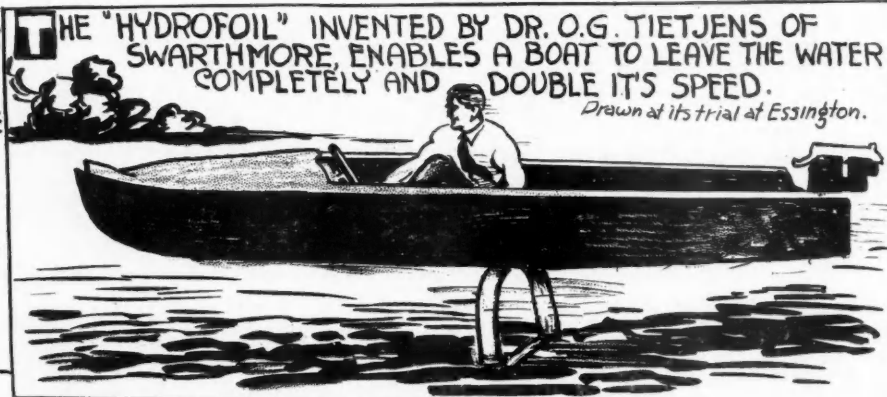
Write us if you  
know an Oddity



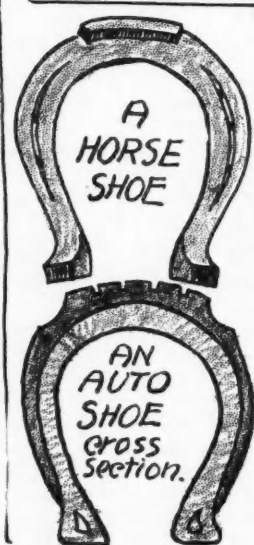
**P**ERHAPS THE RADIATOR ORNAMENT IS A DESCENDANT OF THE STATUE USED BY QUEEN SHUBAD ON A CHARIOT. Ancient Ur.



**T**HEY HAVE WOMAN MOTORCYCLE COPS IN ENGLAND.



**T**HE "HYDROFOIL" INVENTED BY DR. O.G. TIETJENS OF SWARTHMORE, ENABLES A BOAT TO LEAVE THE WATER COMPLETELY AND DOUBLE ITS SPEED. Drawn at its trial at Essington.



A  
HORSE  
SHOE

AN  
AUTO  
SHOE  
cross  
section.



**MAJOR ERNST UDEI**  
CAN PICK UP A HANDKERCHIEF FROM THE GROUND WITH WING TIP WHILE IN FULL FLIGHT. National Air Races Los Angeles 1933.



## Motor Wheel Earns \$342,670

LANSING—Motor Wheel Corp. reports net income for the three months ended June 30 of \$342,670 after charges and taxes as compared with a deficit of \$272,688 in the June quarter last year. For the six months period the net income was \$115,092, after charges and federal taxes, but before debiting \$526,238 for plant revaluation. This compares with a deficit of \$501,297 in the six months period last year.

## A.P. & E.M. Headquarters Opened in G.M. Building

DETROIT—Headquarters of the Automotive Parts and Equipment Manufacturers, Inc., have been opened in Room 2-140 General Motors Building, Detroit. C. C. Carlton of Motor Wheel Corp., is in direct charge.

## Reo Cuts Loss

LANSING—Reo Motor Co. and subsidiaries show a net loss after depreciation, taxes, and other charges for the first six months ending June 30, of \$762,944 as compared with \$1,340,181 loss last year. For the quarter ending June 30 they show a loss of \$303,699 comparing with a loss of \$459,245 in the first quarter.

## Sieger Heads S-M-S Corp.

DETROIT—G. N. Sieger is president and general manager of the newly formed S-M-S Corporation, 1165 Harper Street, Detroit. This organization will specialize in rendering a special metals service, initially in the resistance welding field, where it is prepared to install the newly developed timing controls. The com-

pany also is prepared to supply electrode die materials.

Mr. Sieger formerly was director of the metallurgical division of P. R. Mallory & Co.

## Reynolds Earns \$75,344

DETROIT—A net profit of \$75,344 after depreciation and interest but before provision for income taxes is reported by Reynolds Spring Co. for the quarter ended June 30, 1933. This compares with a net loss of \$19,802 in the corresponding quarter of 1932 and with a loss of \$4,179 in the first quarter of 1933. For the first six months of 1933, net profit after charges but before Federal taxes, was \$71,164 against a loss of \$97,169 in the same period in 1932.

## Wilcox-Rich Earns \$154,853

DETROIT — Wilcox-Rich Corp., subsidiary of Eaton Mfg. Co., Cleveland, has reported for quarter ended June 30, surplus of \$154,853 after taxes and dividend requirements on Class A stock. This compares with a deficit of \$23,203 in the first quarter this year and a surplus of \$10,284 in the second quarter last year.

## McCord Earns \$45,530

DETROIT—McCord Radiator & Mfg. Co. earned \$45,530 after charges in the June quarter, contrasted with a net loss of \$39,352 in the preceding quarter.

## RCA Names Hendrickson

CAMDEN, N. J.—R. C. A.-Victor Co. has appointed E. J. Hendrickson as manager of manufacturers' sales with headquarters in Detroit.

## Cold-Finished Steel Bar Prices Advanced

### \$2 Concession Eliminated on Hot-Rolled Steel Bars

NEW YORK—The looked for advance in the price of cold-finished steel bars was announced early this week when the base price was lifted \$5 a ton from 1.70c., Pittsburgh, to 1.95c. The new price will apply to all business not covered by specifications furnished in July and deliveries against which are to be completed this month, and will continue in force as to September specifications. A considerable tonnage of cold-finished steel bars was contracted for by automotive consumers late in June and during the first half of July in the expectation of this advance and this material is not going forward to buyers under their specifications.

In the hot-rolled steel bar market the looked for elimination of the \$2 per ton concession formerly freely enjoyed by tonnage buyers was preceded by eleventh hour covering.

Leaders in the flat steel division of the market voiced the opinion in the last few days that the crest of summer activities had been passed and that, unless automotive consumers perchance had underestimated their requirements for the immediate future, a moderate tapering off in rolling mill operations during August and part of September was to be expected as seasonally normal.

Washington developments of the week confirmed the impression among purchasing agents that, in a long-range view of the steel market, prevailing prices can safely be put down as the minimum levels that can be looked for during the period of industrial recovery control. It is thought, however, that after the steel industry is permitted to settle down to work under Code regulations, managerial resourcefulness will be able to devise a good many technical improvements and shortcuts that will obviate any necessity of elevating prices to levels at which correction by the law of diminishing returns would have to be apprehended.

**Pig Iron**—With more and more furnaces going into blast and iron moving freely into consumption, selling agents are not greatly interested in adding to their outstanding commitments. On the other hand, most automotive foundries are contented to take on iron in single carloads when and as they need it, and not to worry very much about fourth quarter contracts.

**Aluminum**—More liberal arrivals of foreign aluminum denote that bonded warehouse stocks are being worked lower and that demand is broadening. A shipment of 2000 packages of ingots from Norway was noted this week. Canadian exports have jumped from 550,000 pounds in April to approximately 7,000,000 pounds in May and 5,000,000 pounds in June. Prices are unchanged.

**Copper**—There is considerable speculation in the market as to whether proposed Code provisions, about which little has been said, will result in lifting the price above the 9c level now in vogue and at which demand is rather light.

**Tin**—Responding to the vagaries of the Sterling exchange market, Straits tin opened the week at 45½, ¼c below last week's close.

## Labor Turnover in Manufacturing Establishments Shows Improvement

WASHINGTON—According to labor turnover reports by the Bureau of Labor Statistics from representative manufacturing establishments in 148 census industry classifications, the hiring rate for the second quarter of 1933 was more than twice as high as during either the corresponding quarter of 1932 or the first quarter of 1933. In contrast, the layoff rate for the second quarter of 1933 was less

than one-half of that for the first quarter, and only slightly more than one-third of the layoff rate for the second quarter of 1932.

The rates shown herein represent the number of changes per 100 employees that took place during the three months ending June 30, 1933. The form of average used by the Bureau of Labor Statistics for turnover rates is the weighted arithmetic mean.

Quarterly Turnover Rates in Representative Factories in 148 Industries

	Quit		Separation rates		Layoff		Total separation		Accession rate		Net turnover rate	
	1932	1933	1932	1933	1932	1933	1932	1933	1932	1933	1932	1933
1st	2.28	1.56	0.58	0.38	8.18	10.14	11.04	12.08	9.65	8.50	9.65	8.50
2nd	2.15	2.23	0.49	0.52	12.92	4.46	15.56	7.21	7.80	20.86	7.80	7.21
3rd	2.10		0.45		10.78		13.33		12.55		12.55	
4th	1.77		0.43		8.75		10.95		10.50		10.50	

Automotive Industries

August 5, 1933

## Recovery Administration Wants One Code for All Truck Users, Muir Tells Britton

**Code Governing Highway Freight Transportation Must Be Broad Enough to Cover Private Truckers as Well as Private and Contract Motor Carriers**

WASHINGTON, D. C. — Malcolm Muir, deputy administrator of the National Recovery Administration, has indicated that the attitude of the government is that any code submitted to govern highway freight transportation must be broad enough to include not only the common and contract carriers but privately owned trucks.

Until now the impression has prevailed in many quarters that the owners of private trucks, including those corporations which operate huge fleets largely in the conduct of their own business, would be provided for in other codes. This was the assumption of the group which recently met at Chicago and designated the American Highway Freight Association as the body which would formulate and submit the code. In the national organization which was set up at the Chicago meeting, the private truck owner was not taken into consideration.

The government's attitude was explained to Roy F. Britton, director of the National Highway Users Conference, by Mr. Muir, who suggested that he acquaint all groups interested in highway transportation with the National Recovery Administration's present policy.

Mr. Britton has notified truck asso-

ciations throughout the country and, so far as possible, all agricultural and industrial groups which will be affected of the administration's position. In his communication, he quoted from a letter from Mr. Muir, in which the deputy administrator said that it was indicated that one code governing all types of highway freight transportation is desired and that the organization which formulates such a code shall be representative of all the "so-called for hire groups, consisting of common carrier and contract carrier truckers and the much larger numerical volume of privately owned trucks operating over the highways."

"The National Highway Users Conference," said Mr. Britton, "will not participate in the preparation of a code nor will it attempt to promote an organization to formulate such a code." He added that the information was being issued for the guidance of those concerned and that the Conference "strongly urges that immediate steps be taken to comply with the suggestion contained in Mr. Muir's letter that 'the state truck associations \* \* \* will in the near future appoint some member from each state who will truly represent the entire motor truck field and who, collectively, will formulate a general motor truck code.'"

the A.S.S.T. and the other societies participating in the National Metal Congress. These societies include the American Welding Society, the American Institute of Mining and Metallurgical Engineers (Institute of Metals and Iron and Steel Divisions), and the Wire Association.

Thirty papers have been tentatively placed on the A.S.S.T. program, of which 21 will be preprinted. Details of the other programs will be announced shortly.

## Bus Operators Protest Southern Ry. Rate Cut

WASHINGTON, D. C.—Calling attention to the terms of the National Industrial Recovery Act which would prohibit unfair competition between industries as well as within industries, the National Association of Motor Bus Operators has filed with the National Recovery Administration a formal request for the aid of that agency in an effort which the motor bus lines of the country are making to have the Interstate Commerce Commission suspend a proposed low rate passenger tariff to be put into effect by the Southern Railway System August 1. This tariff which would apply between most points on the Southern System would be at a rate of 1½ cents per passenger mile or 58 per cent under the present standard rate of 3.6 cents per mile.

The Bus association contends that the proposed rate is not compensatory and states its belief that the tariffs as proposed would demoralize the passenger traffic situation generally and force bus lines in the territory covered by the proposed tariffs to meet the proposed decrease with the same non-compensatory results.

## Gasoline Consumption Gains Over '32 in May

NEW YORK—Gasoline consumption in May totaled 1,353,416,000 gal. as compared with 1,207,301,000 gal. in April and 1,322,966,000 gal. in May last year, representing gains respectively of 12 and 2 per cent. This is the first time consumption has exceeded the same month a year earlier since 1930, indicating that the increases in new car sales are being paralleled by increases in automobile use.

For the first five months, consumption amounted to 5,638,180,000 gal. against 5,900,246,000 gal. in the same period in 1932, a decrease of 3.8 per cent.

## Surfaced Roads Now Total 266,060 Miles

WASHINGTON—Surfacing of 29,577 miles of state highways was completed in 1932, according to information collected from state officials by the Bureau of Public Roads, U. S. Department of Agriculture. On 19,-

568 miles the surfaces laid were of low type, such as sand-clay, gravel and waterbound macadam; on 10,009 miles the surfaces were of higher type.

The state highway systems now include 358,210 miles, an increase of 29,268 miles during the year. The combined systems are reported to have 109,735 miles of high-type surface, 156,325 miles of low-type surface and 92,150 miles still unsurfaced.

## Metal Show to Be Biggest Since 1929

CLEVELAND — Reservations in the fifteenth annual National Metal Exposition, which opens in Convention Hall, Detroit, on Oct. 2, are now far in excess of the total space used at the Buffalo show last year, W. H. Eisenmann, secretary of the American Society for Steel Treating, has announced.

To date more than 100 companies have reserved nearly 75 per cent of the available exhibit space, assuring the largest Exposition since 1929.

Technical programs are planned by

## Timken Earnings Better Last Year's Record

CANTON, O.—Timken Roller Bearing Co. earned \$929,460 in the second quarter of 1933 after depreciation, taxes, etc., as compared with a net profit of \$199,903 in the corresponding quarter last year, and with a deficit of \$276,066 in the first quarter of 1933. For the first six months of 1933, earnings totaled \$653,393 against \$417,520 a year ago.

## Dr. Briggs Appointed

WASHINGTON — Dr. Lyman J. Briggs who has been acting director of the National Bureau of Standards since the death of Dr. George K. Burgess in July, 1932, has been appointed Director of the Bureau. Dr. Briggs' entire career has been in the service of the Government. He is a member of the American Standards Association representing the Department of Commerce.

# Technical Program—S. A. E. International Engineering Congress

Palmer House, Chicago, August 28 to September 4, 1933

## MONDAY, AUGUST 28

### Military Session—9:30 A.M.

COL. H. W. ALDEN, *Chairman*  
Developments in Ordnance Automotive Equipment—Maj. H. A. Nisley, Ordnance Department, U. S. A.  
Military Theories and Development of Motor Transport—Lt. Col. Brainerd Taylor, Quartermaster Corps, U. S. A.

### Shop Equipment Session 9:30 A.M.

F. E. MOSKOVICS, *Chairman*  
Industry Needs an Equipment Policy for Profitable Operation—J. Geschelin, Automotive Industries.

### Business Session—7:45 P.M.

President H. C. Dickinson in the Chair.

### Transportation Economics Session 8:00 P.M.

J. F. WINCHESTER, *Chairman*  
How Economies in Motor Vehicle Operation Can Be Effectuated from an Operator's Standpoint—Clinton Brettell, R. H. Macy & Co., Inc.  
Effecting Economies in Motor Vehicle Operation—L. V. Newton, Byllesby Engineering and Management Corp.

### Marine Section—8:00 P.M.

W. E. JOHN, *Chairman*  
Gold Cup Racers—G. F. Crouch, Henry B. Nevins, Inc.  
Developments of the Modern Propeller for Speed Boats—T. F. W. Meyer, Federal Mogul Corp.

## TUESDAY, AUGUST 29

### Brakes Session—9:30 A.M.

M. C. HORINE, *Chairman*  
Factors Controlling Brake Design—B. B. Bachman, The Autocar Co.  
Legislative Requirements with Respect to Brake Effectiveness and an Analysis of Various Codes—D. Beecroft, Bendix Aviation Corp.

### Machine Finishes Session 9:30 A.M.

V. P. RUMELY, *Chairman*  
When Quieter Gears Are Demanded, How Will We Make Them?—F. W. Cederleaf, Buick Motor Co.  
External Broaching—C. E. Bleicher, Chrysler Corp.

### Legislation and Regulation Session 8:00 P.M.

A. J. SCAIFE, *Chairman*  
Motor Transportation Legislation—Daniel Upthegrove, President, St. Louis Southwestern Railway (Invited)  
Looking Forward in the Field of Transportation—F. C. Horner, General Motors Corp.  
Summary of 1933 Motor Vehicle Legislation—Pierre Schon, General Motors Truck Co.

## WEDNESDAY, AUGUST 30

### Fuel Economy Session—9:30 A.M.

T. C. SMITH, *Chairman*  
Why Waste Fuel Through the Exhaust?—L. T. White, Cities Service Oil Co.  
Fuel Economy from the Engine Designer's Point of View—J. B. Macauley, Chrysler Corp.  
Economy Through Fuel Selection—Neil MacCoub, The Texas Co.  
Economy Through Fuel Selection—Dr. O. C. Bridgeman, Bureau of Standards.

### Tractor Session—9:30 A.M.

O. B. ZIMMERMAN, *Chairman*  
Trends in Tractor Engine Design—J. B. Fisher and L. L. Bower, Waukesha Motor Co.

Comparative Tests of Pneumatic Tires and Steel Wheels on Farm Tractors in Agricultural Operations—Prof. C. W. Smith, University of Nebraska.

### Transportation Luncheon 12:30 P.M.

FRED FAULKNER, *Chairman*  
Predetermined Operating Requirements for Purchasing Equipment—J. M. Orr, Equitable Auto Co.

### Passenger Car Session—8:00 P.M.

W. T. FISHLEIGH, *Chairman*  
Our Future Traveling Public and What They Want—W. B. Stout, Stout Engineering Laboratories.  
What Is the Matter with American Cars?—L. H. Pomeroy, Daimler Co., Ltd.

## THURSDAY, AUGUST 31

### S.A.E. Day at the World's Fair

### Diesel Session—9:30 A.M.

B. B. BACHMAN, *Chairman*  
Hydraulics of High-Speed Fuel Injection—Nicholas Fodor, New York City.  
Ignition Delay of Diesel Fuels Measured by Bouncing Pin in C.F.R. Engine—Julius Kuttner, Consulting Engineer, New York City, and J. B. Rippere, Graduate Student, Polytechnic Institute of Brooklyn.

### Body Session—9:30 A.M.

R. F. ANDERSON, *Chairman*  
Budgeting Body Construction and Tool Costs—N. H. Manning, Briggs Mfg. Co.  
Air Conditioning and Relative Refinements for Auto Bodies—Dr. F. A. Moss, The George Washington University.  
Body Drawings and Exhibits.

### Diesel Session—2:00 P.M.

HARTE COOKE, *Chairman*  
European Automotive Diesels—T. B. Rendel, Shell Petroleum Corp.  
Combustion Problems on Automotive Diesel Engines—J. B. Fisher, Waukesha Motor Co.  
Factors in Automotive Diesel Development—O. D. Treiber, Hercules Motors Corp.

### Dinner—6:30 P.M.

D. G. ROOS, *Master of Ceremonies*  
Tuning-in on the Consumer—H. G. Weaver, General Motors Corp.  
Presentation of Guggenheim Medal to J. C. Hunsaker.

## FRIDAY, SEPTEMBER 1

### Oil Consumption Session 9:30 A.M.

H. L. HORNING, *Chairman*  
Conformity of Cylinders, Pistons and Rings—R. R. Teetor, Perfect Circle Co.  
Hydraulic Action in Piston Ring Design—D. D. Robertson, Wilkening Mfg. Co.  
Engine Friction Analysis—L. C. Lichty, Yale University, and G. B. Carson, Graduate Student, Yale University; now instructor, Case School of Applied Science.  
Oil Consumption—J. P. Stewart, Vacuum Oil Co.

### Aircraft Session—9:30 A.M.

G. W. LEWIS, *Chairman*  
Airships for Commercial Purposes—J. C. Hunsaker, Goodyear Zeppelin Corp.  
Manufacture and Magnetic Inspection of Hollow Steel Propellers—Hamilton Foley, Pittsburgh Screw and Bolt Corp.

### Lubricants Session—2:00 P.M.

A. E. BECKER, *Chairman*  
Extreme Pressure Lubricants—S. A. McKee, F. G. Bitner and T. R. McKee, Bureau of Standards.  
Causes and Effects of Sludge Formation in Motor Oils—D. P. Barnard, E. R. Barnard, T. H. Rogers, B. E. Shoemaker and R. E. Wilkin, Standard Oil Co. (Ind.)

### Passenger Car Session—8:00 P.M.

J. M. CRAWFORD, *Chairman*  
The Engineer's Place in the Economic Picture—C. F. Kettering, General Motors Corp.  
Engineering the Knocks and the Knots—E. C. Elliott, President, Purdue University.

## SATURDAY, SEPTEMBER 2

### Passenger Car Session—9:30 A.M.

L. P. KALB, *Chairman*  
Independent Springing—Georges Brouhiet, Paris, France.  
Engine Mountings—Alex Taub, Chevrolet Motor Co.

### Aircraft Engine Session 9:30 A.M.

C. L. LAWRENCE, *Chairman*  
Sleeve Valve Engines of High Output—A. J. Meyer, R. N. DuBois and C. F. Bachle, Continental Aircraft Engine Co.  
High-Output Poppet-Valve Cylinders—F. L. Prescott, Material Division, Army Air Corps.  
Detonation Rating of Aviation Fuels—Arthur Nutt, Wright Aeronautical Corp.

### Saturday Evening

S.A.E. Bal Tabarin Frolic  
Staged with the cooperation of the Chicago Section.

## SUNDAY, SEPTEMBER 3

### Aircraft Session—8:00 P.M.

E. P. WARNER, *Chairman*  
National Contributions to Aeronautical Science—C. R. Fairey, England.  
M. Caquot, France.  
Dr. Wilhelm Hoff, Germany.  
Gen. G. A. Crocco, Italy.  
Russian Air Transport—Arthur Adams, Amtorg Trading Corp.

## MONDAY, SEPTEMBER 4

### Airplane Engine Session 9:30 A.M.

A. V. D. WILLGOOS, *Chairman*  
Altitude Performance of Aircraft Engines Equipped with Gear Driven Superchargers—R. F. Gagg and E. V. Farrar, Wright Aeronautical Corp.  
Flame Propagation—Dr. Kurt Schnauffer, Germany.  
Possible Future Development of Air-Cooled Aero Engines—A. H. R. Fedden, Bristol Aeroplane Co., Ltd.

### Aircraft Session—9:30 A.M.

R. C. GAZLEY, *Chairman*  
The Aerodynamics of Wing Sections for Airplanes—E. N. Jacobs, National Advisory Committee for Aeronautics.  
Airplane Vibrations and Flutter—J. A. Roché, U. S. Army Air Corps.

### Aircraft Session—8:00 P.M.

L. D. SEYMOUR, *Chairman*  
Some Aspects of Air Transportation—P. G. Johnson, United Aircraft and Transport Corp.  
Aircraft Maintenance on Scheduled Service—Jack Frye, Transcontinental and Western Air, Inc.



## A.P. & E.M. Code Ready for Filing

(Continued from page 164)

ing in the activities under the National Industrial Recovery Administration.

Applications for membership in the APEM are coming in rapidly, 375 having been received when this was written. Articles of incorporation were filed in the State of Illinois on Wednesday.

The APEM is expecting rapid action on its code in Washington, and it seems quite possible that it may come up for consideration the latter part of next week. There are some minor changes in the code provisions as outlined in last week's *Automotive Industries*, the principal ones being in Article IV—Unfair Competition, which is given below in full, so that all of these provisions may be presented as they now stand.

### ARTICLE IV—UNFAIR COMPETITION

(1) It shall be unfair competition for any manufacturer engaged in the manufacture of Automotive Parts and/or Equipment as embraced by the Divisions or Groups enumerated in Article II or others later established to sell his products below cost. Such cost as used herein is defined to include for each individual plant the current delivered market cost of raw materials and supplies; fair wages for employees not inconsistent with the provisions of Article III of this Code; and a standard allowance based on experience under average operations for power, light, heat, water, repairs and maintenance of buildings and equipment; executive, supervisory, engineering, experimental and development, sales and office salaries and expenses; advertising and promotional expense; distribution and delivery expense; rent; professional and collection expenses; depreciation and obsolescence of buildings and equipment at specified rates; insurance; all taxes; and all other items and expenses necessary and incidental to the manufacture and/or production and sale of such products.

A cost accounting system shall promptly be adopted by each Product Group, becoming effective upon approval by, and at the date set by, the Product Group Committee, and such system shall be used by all manufacturers who are members of the Product Group in allocating the above items in determining the cost of specific products.

Where a manufacturer produces more than one line of products, each line shall be considered a separate unit for purposes of ascertaining costs and expenses of all kinds shall be properly and fairly allocated to the several lines.

(2) Cash or trade discounts, freight, express, cartage, or other delivery expenses allowed from invoice price shall be deducted therefrom in determining the net sales price.

(3) Nothing in this Code shall be interpreted to prevent the sale of dropped lines or surplus stock, or inventories which must be converted into cash to meet immediate financial needs, at such prices as are necessary to move such merchandise, provided that all such stocks are first reported to the Product Group Committees and by them in turn to all Division Administrators whose Groups may be affected by such action.

(4) The defamation of competitors by falsely imputing to them dishonorable conduct, inability to perform contracts, questionable credit standing, or by other misrepresentations with the tendency and capacity to mislead and deceive purchasers or prospective purchasers, is unfair competition.

(5) Maliciously enticing away the employees of competitors with the purpose and effect of unduly hampering, injuring or embarrassing competitors in their business, is unfair competition.

(6) Withholding from, or inserting in the invoice, facts which make the invoice a false record, wholly or in part of the transaction represented on the face there-

of, and/or the payment or allowance of secret rebates, refunds, credits, unearned discounts, whether in the form of money or otherwise, is unfair competition.

(7) False disparagement of the weight, substance, strength, grade or quality of the goods of competitors, with the tendency and capacity to mislead or deceive purchasers or prospective purchasers, is unfair competition.

(8) Selling or offering to sell any product with intent to deceive purchasers or prospective purchasers as to the quantity, quality, grade, or substance of such product, is unfair competition.

(9) No provision of this Code shall be interpreted or applied in such manner as to:

- (a) Promote monopolies,
- (b) Permit or encourage unfair competition,
- (c) Eliminate or oppress small enterprises, or
- (d) Discriminate against small enterprises.

## Reorganization of Whitman & Barnes O.K.'d

CHICAGO—Stockholders of Whitman and Barnes, Inc., tool manufacturers established in 1854, have approved the reorganization of the company which enabled it to acquire the Latrobe Tool Manufacturing Co., the J. M. Carpenter Tap and Die Co., and the Valley Forge Steel and Tool Co.

No consolidation of manufacturing facilities is contemplated at present. The four companies, it is stated, will carry on with the present staff of employees in support of President Roosevelt's recovery program. As a result of the reorganization capital stock was increased to 300,000 shares, of which 184,000 have been issued and listed on the Detroit Stock Exchange.

## CALENDAR OF COMING EVENTS

### SHOWS

Eastern States Exposition, Springfield, Mass. .... Sept. 17-23  
National Metal Exposition, Detroit ..... Oct. 2-6  
Joint Trade Show, M.E.M.A., N.S.P.A., M.E.W.A. .... Oct. 30-Nov. 4  
New York Automobile Show, Jan. 6-13, 1934  
Chicago Automobile Show, Jan. 27-Feb. 3, 1934

### CONVENTIONS

Nat. Assoc. of Motor Bus Operators, Chicago ..... Sept. 21-22  
National Metal Congress, Detroit ..... Oct. 2-6

### MEETINGS

S.A.E. International Automotive Engineering Congress, Chicago, Aug. 28-Sept. 4  
American Chemical Society, Chicago, Sept. 11-15  
American Transit Assoc., Chicago, Sept. 18-20  
National Petroleum Assn., Annual, Atlantic City ..... Sept. 20-22  
Natl. Safety Council, Chicago, Oct. 2-6  
National Metal Congress, Detroit, Oct. 2-6  
American Petroleum Institute, Annual, Chicago ..... Oct. 24-26  
Commercial Motor and Transport Vehicle Exhibition, London, England, Nov. 2-11  
International Automobile Salon, Paris, France ..... Oct. 5-16  
International Automobile and Motorboat Show, London, England, Oct. 12-21

## After-Market and M.E.M.A.-A.P.E.M. Merger

(Continued from page 164)

also will continue to serve all of the divisions created by the new set-up."

Previously E. P. Chalfant, executive vice-president of the National Standard Parts Association, had issued the following statement:

"As reported by Chairman C. S. Davis before the A.P. & E.M. organization meeting today, the officers and executives of the N.S.P.A. have for several weeks been in close cooperation with the organization committee of the new group.

"We are tremendously pleased with the reception which the assembled manufacturers accorded the plan presented and particularly so with the prompt approval of a code for all manufacturers in the industry.

"The N.S.P.A. and A.P.E.M. will each have their own job to do; the A.P.E.M. concentrating on the industrial recovery activity and the N.S.P.A. continuing and expanding the many other manufacturer services which have been developed to meet the industry's needs.

"This is perhaps best indicated in Chairman Davis' report when he said, 'The committee therefore recommends that support be given to the N.S.P.A. members of our industry engaged in the manufacture of replacement parts, and that the new association we shall recommend, should definitely refrain from duplicating functions and activities of the N.S.P.A. in so-called "after-market" fields. That is a conclusion reached, gentlemen, after the most careful thought and study.'

## Studebaker Sales Up 42.6% in Early July

SOUTH BEND—Retail deliveries of Studebaker passenger and commercial cars in the United States during the first 10 days of July were 42.6 per cent higher than for the corresponding period of 1932. Rockne deliveries during the same period were 23.5 per cent above 1932, according to Paul G. Hoffman, president of The Studebaker Sales Corporation of America. "During the first 10 days of July our dealers in the United States delivered 1,195 cars at retail," said Mr. Hoffman. "This exceeds deliveries for the corresponding periods of all previous years since 1929."

## White Loss \$1,867,900

CLEVELAND—A net loss for the six months ended June 30 of \$1,867,900 after charges is reported by the White Motor Company. This compares with a loss of \$1,427,707 in the corresponding 1932 period. Net working capital on June 30 was \$16,557,761 against \$20,027,923.